SONY®

TRINITRON® COLOR VIDEO MONITOR

BVM-1201

OPERATION AND MAINTENANCE MANUAL

3rd Edition

Serial No. 15,186 and later

SONY®

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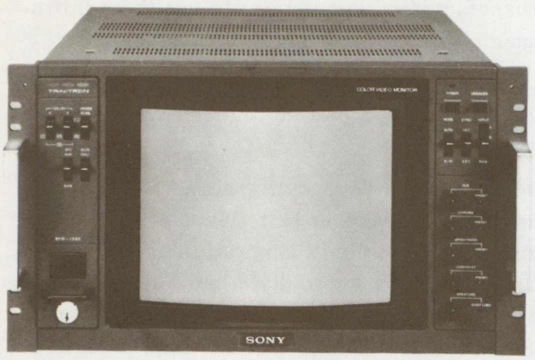
BVM-1201



Chassis No. SCC-210C-A

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

CAUTION!!

DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

ATTENTION!!

NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

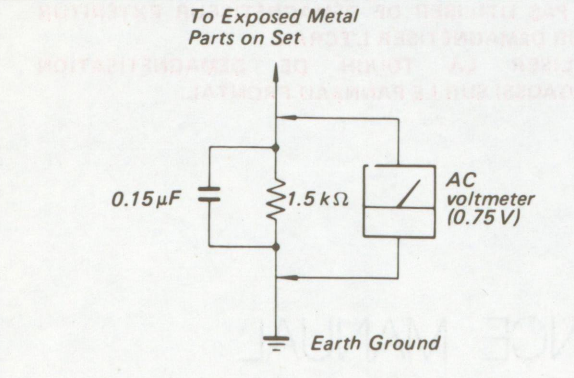


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

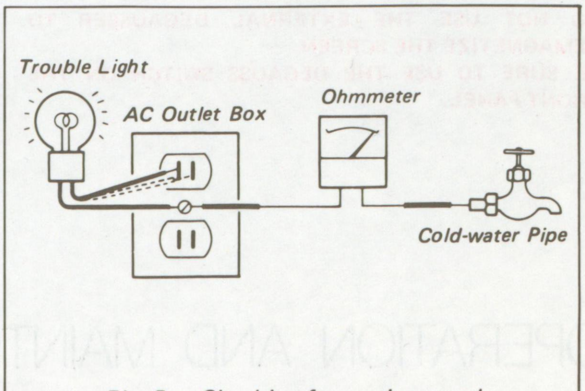


Fig. B. Checking for earth ground.

TABLE OF CONTENTS

SECTION 1
OPERATION

1-1. FEATURES

- The BVM-1201 uses the finer picture tube whose resolution is approximately one and half times as high as that of our conventional picture tube.
- The BVM-1201 is equipped with the composite video A, B and the R.G.B inputs, which are selected with the INPUT select switch.
- An internal or an external synchronization is available by switching the SYNC select switch.
  Furthermore, if a composite sync signal is contained within the G-channel input signal, the BVM-1201 can be operated with the internal sync.
- The BVM-1201 employs two color modes, AUTO and B/W.
  In the AUTO mode, color or B/W mode is automatically selected by detecting the color burst presence.
  In the B/W mode, chroma channel is deactivated and the picture is always displayed in B/W mode.
- The synchronizing signal can be displayed on the screen.
  When the H DELAY switch is turned on, the horizontal sync is displayed in left approximately one-fourth of screen.
  When the V DELAY switch is turned on, the vertical sync is displayed near the center of screen, expanded on the screen by approximately 3 times.
  If both the H and V DELAY switches are activated, the pulse cross display is shown on the screen. At this time, vertical sync expansion is cancelled by activating the UNDERSCAN switch.
- The AFC switch is provided to select the horizontal AFC time constant, FAST or SLOW. The SLOW mode is used to monitor the jitter from the VTR.
- The tally lamp which consists of seven LED segments displays the figure from 0 to 9.
  Furthermore, the tally lamp can be turned on by remote control with the rear TALLY-REMOTE connector short-circuited.
- The left front panel can be pulled out. On this panel, the linearity, convergence and other controls are located for easier adjustments.
- Overdrive protection circuit is provided to protect the picture tube from damage caused by the troubles such as in the deflection system.
- If the composite video or composite sync signal is applied to the VIDEO A (or B), or EXT SYNC connectors respectively, the crosshatch pattern, synchronized to the signal, can be displayed on the screen by setting the CROSS HATCH switch, located on the panel pulled out, to ON.
- The arms and the slide rails can be attached to the BVM-1201 left and right sides. These attachments enable the BVM-1201 to be mounted in an EIA standard 19-inch rack.

1-2. SPECIFICATIONS

System	525 lines per picture, 60 fields per second interlaced, NTSC
Power consumption	Typical: 126 watts Maximum: 150 watts
Line voltage	The line voltage is switchable between 100, 120, 220, 240 volts. Each line voltage within ±10%
Inputs performance	
Connectors	BNCs
R.G.B. / VIDEO inputs	0.714 Vp-p non-composite or 1 Vp-p composite video signal ±6 dB positive, loop through, high impedance.
EXT SYNC inputs	4 Vp-p ±6 dB negative, loop through, high impedance.
Return loss	At least 46 dB to 5 MHz with 75 Ohm termination. (not internally terminated)
Maximum safe input DC	±5 volts
Hum rejection	Hum is at least 50 dB down and maximum hum is less than 4 Vrms, where hum is applied to the monitor in floating ground mode.
RGB performance	
Differential gain	Within 2% for a luminance from zero to 20 FL
Differential phase	Within 2 degrees for a luminance from zero to 20 FL
Frequency response	100 Hz to 8 MHz ±1 dB
DC restoration	Back porch type Back porch level within 1% of peak luminance from 10% to 90% APL.
Synchronization	
AFC Slow	Weighting factor is more than 5 from 2 Hz to 100 Hz.
Fast	Weighting factor is less than 1 to 2 Hz 2 to 10 Hz 3 to 500 Hz 4 to 10 kHz
Line pull range/ Line hold range	More than ±500 Hz at fast time constant
Vertical retrace time	
Normal	Within 1 msec.
Underscan	Within 0.8 msec.
Horizontal retrace time	Within 10 micro-sec.

Height 182 mm

Width 239 mm

Underscan Approximately 10% reduction

Linearity Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height

Color temperature 6500 degrees K, adjustable to other standards

Nominal chromaticity co-ordinates

	330-VB22		M30JBC20X	
	x	y	x	y
Red	0.635	0.33	0.630	0.340
Green	0.29	0.60	0.310	0.595
Blue	0.15	0.06	0.155	0.070

Convergence error Less than ±1 mm within the central area
Outside of the central area, less than ±2 mm

Calibrated contrast 20 FL at peak white of standard 1 Vp-p signal.

Raster size stability Less than 1% picture height, zero to 100 APL (Average Picture Level) at 20 FL peak luminance

Scan delay

Horizontal delay Approximately 1/4 line.

Vertical delay Approximately one half field, vertical scan is expanded unless underscan is activated.

Resolution Minimum, 600 TV lines center at 20 FL luminance

Environment

Operating ambient temperature Zero to +40 degrees C

Satisfied specification ambient temperature 20 to 30 degrees C

Humidity Zero to 90%
Non-condensing

Altitude 10,000 feet

General

Picture tube protection EHT (Extremely High Tension) is protected in the event of scan failure.

Warm up 30 minutes to meet specification

Heater voltage Regulated DC

Anode voltage Properly adjusted HV 20kV at zero beam current

Note: There are two kinds of picture tube used for the following serial numbered units.
Serial No. up to 1,5000: 330-VB22
Serial No. 1,5001 and later: M30JBC20X

Physical characteristics

Dimensions

	Cabinet	Rackmount
Height	276 mm	266 mm
Width	424 mm	480 mm
Depth (without arms)	454 mm	454 mm

Weight Net weight 26 kg 27.5 kg

Notes:
- When the AC power cord and the remote terminal are used, depth of dimension is 545 mm.
- The BVM-1201 has the arms for rack mounting.
- It is possible to remove the bottom feet from the cabinet when rack mounting.
- For details of the dimensions, refer to "1-6. RACK MOUNTING".

NTSC performance

Luminance channel

Differential gain Within 2% for a luminance from zero to 20 FL

Differential phase Within 2 degrees for a luminance from zero to 20 FL

Frequency response Monochrome mode.
100 Hz to 6.5 MHz ±1 dB.
(aperture correction at zero)
Color mode
Notch filter removes frequency in 3.58 MHz region.

Chrominance channel

Demodulation axis R-Y, B-Y

Bandpass 1.3 MHz equiband

Subcarrier regeneration ±1 degree (standard input signal)

Hue range More than ±15 degrees (standard input signal)

Color range Preset at zero dB
More than ±6 dB

Chrominance/luminance

Time error Less than 40 nsec

Gain error Less than 5%

Aperture correction A continuously adjustable front panel control provides up to 8 dB boost at 4.5 MHz

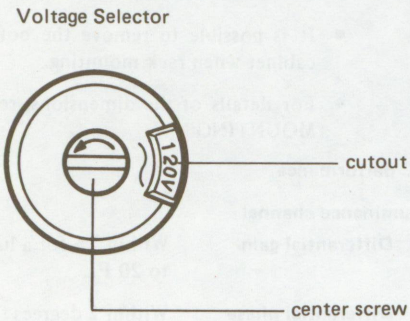
DC restoration Back porch type
Back porch level within 1% of peak luminance from 10% to 90% APL.

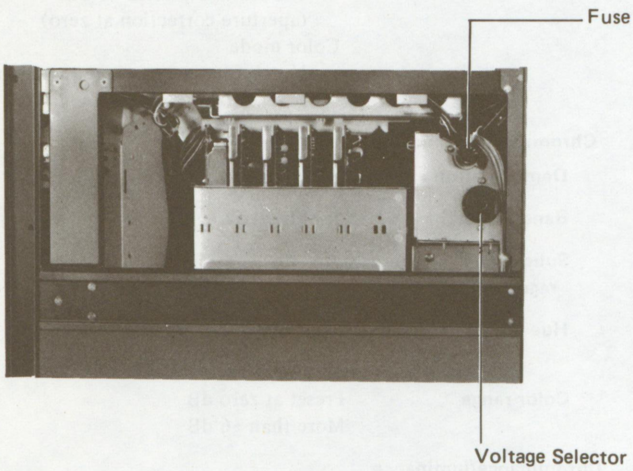
1-3. VOLTAGE SELECTION

The BVM-1201 can be operated on ac power line voltage of either 100 V, 120 V, 220 V, or 240 V, by resetting the Voltage Selector located inside the cabinet at the right side.

The Voltage Selector can be reset as follows. Before proceeding, be sure that the AC power cord is disconnected from the ac outlet. Remove the center screw by turning it counterclockwise with a screwdriver. Then pull out the Voltage Selector and reinsert it so that the proper voltage figure appears at the cutout. Finally fasten the original center screw.

- Use the 3.15 A fuse for 100 V or 120 V setting, and 1.6 A fuse for 220 V or 240 V setting.



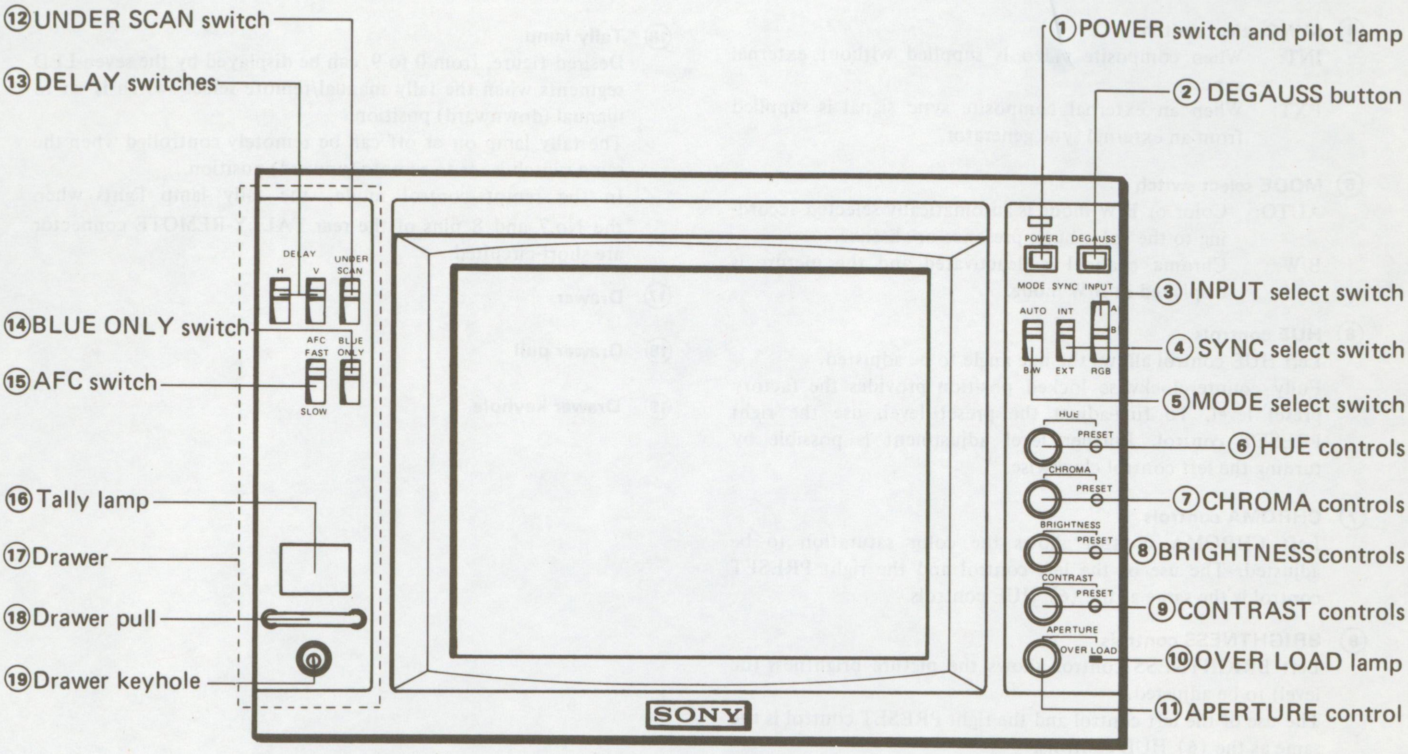


1-4. INSTALLATION INSTRUCTIONS

- Install the BVM-1201 in a location which is dry and well ventilated.
- Avoid installation in a room with a high temperature or near a heat source.
- Avoid installation in dusty areas or areas which are subjected to vibration.
- Avoid areas where high electric or magnetic fields are to be found.
- Avoid areas where the BVM-1201 will be exposed to direct sunlight, other strong lights or flashes of light.

1-5. OPERATION CONTROLS

1-5-1. Front panel



① **POWER switch and pilot lamp**

② **DEGAUSS button**
This button is used to demagnetize the screen. Depress this button for about 10 seconds after the power has been applied.

③ **INPUT select switch**
A: For the signal connected to the VIDEO A connectors.
B: For the signal connected to the VIDEO B connectors.
RGB: For the signals connected to the R, G and B connectors.

④ **SYNC select switch**
INT: When composite video is supplied without external sync.
EXT: When an external composite sync signal is supplied from an external sync generator.

⑤ **MODE select switch**
AUTO: Color or B/W mode is automatically selected according to the color burst presence or absence.
B/W: Chroma channel is deactivated and the picture is displayed in B/W mode.

⑥ **HUE controls**
Left HUE control allows the hue angle to be adjusted.
Fully counterclockwise locked position provides the factory preset level. To fine-adjust the preset level, use the right PRESET control. Further level adjustment is possible by turning the left control clockwise.

⑦ **CHROMA controls**
Left CHROMA control allows the color saturation to be adjusted. The use of the left control and the right PRESET control is the same as the ⑥ HUE controls.

⑧ **BRIGHTNESS controls**
Left BRIGHTNESS control allows the picture brightness (dc level) to be adjusted.
The use of the left control and the right PRESET control is the same as the ⑥ HUE controls.

⑨ **CONTRAST controls**
Left CONTRAST control allows the picture contrast to be adjusted. The use of the left control and the right PRESET control is the same as the ⑥ HUE controls.

⑩ **OVER LOAD lamp**
This lamp illuminates to warn the over load when the overdrive protection circuit is in operation.

⑪ **APERTURE control**
This control allows the frequency response to be adjusted.
Fully counterclockwise locked position provides the factory preset level.

⑫ **UNDER SCAN switch**
This switch selects the normal scanning or underscanning.
Underscanning reduces display size by about 10%. When the V DELAY is activated, this switch cancels the vertical sync expansion.

⑬ **DELAY switches**
H; Picture is shifted horizontally, and the horizontal sync is displayed in left approximately one-fourth of screen.
Picture brightness is automatically increased.
V: Picture is shifted vertically, and the vertical sync is displayed near the center of screen. Picture is expanded by approximately 3 times, unless the underscan is activated.
Picture brightness is automatically increased.

- Pulse cross picture can be displayed by activating both the H and V switches.

⑭ **BLUE ONLY switch**
This switch turns off the red and green beams to facilitate VTR calibration.

⑮ **AFC switch**
FAST: AFC operation is performed in the fast mode. In this mode, incoming sync timing errors are largely corrected.
SLOW: AFC operation is performed in the slow mode, and incoming sync timing errors are displayed in the screen.

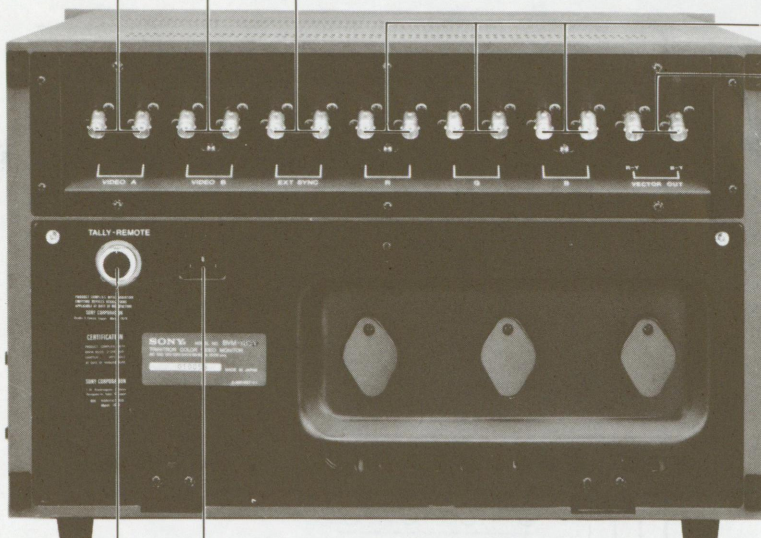
⑯ **Tally lamp**
Desired figure, from 0 to 9, can be displayed by the seven LED segments when the tally manual/remote select switch is set to manual (downward) position.
The tally lamp on or off can be remotely controlled when the same switch is set to remote (upward) position.
In the remote-control mode, the tally lamp lights when the No.7 and 8 pins of the rear TALLY-REMOTE connector are short-circuited.

⑰ **Drawer**

⑱ **Drawer pull**

⑲ **Drawer keyhole**

1-5-2. Connector panel



① **VIDEO A connectors**
② **VIDEO B connectors**
BNC connectors, 0.714 Vp-p non-composite or 1 Vp-p composite video ±6 dB, positive, loop through, high impedance.

③ **EXT SYNC connectors**
BNC connectors, 4 Vp-p ±6 dB, negative, loop through, high impedance.

④ **R, G, B connectors**
BNC connectors, 0.714 Vp-p non-composite or 1 Vp-p composite video ±6 dB, positive, loop through, high impedance.

⑤ **R-Y, B-Y connectors**
BNC connectors, R-Y and B-Y demodulated chroma output. This connectors provides high impedance output from the R-Y and B-Y demodulated circuits for driving the Tektronix 602 Display Unit. This output enables the unit to provide vector displays.

⑥ **TALLY-REMOTE connector**
10P special connector

Pin No.	Remarks
1	REMOTE and VIDEO A
2	EXT SYNC
3	CROSS HATCH
4	VIDEO B
5	R, G, B
6	REMOTE GND
7	TALLY
8	TALLY
9	————
10	————

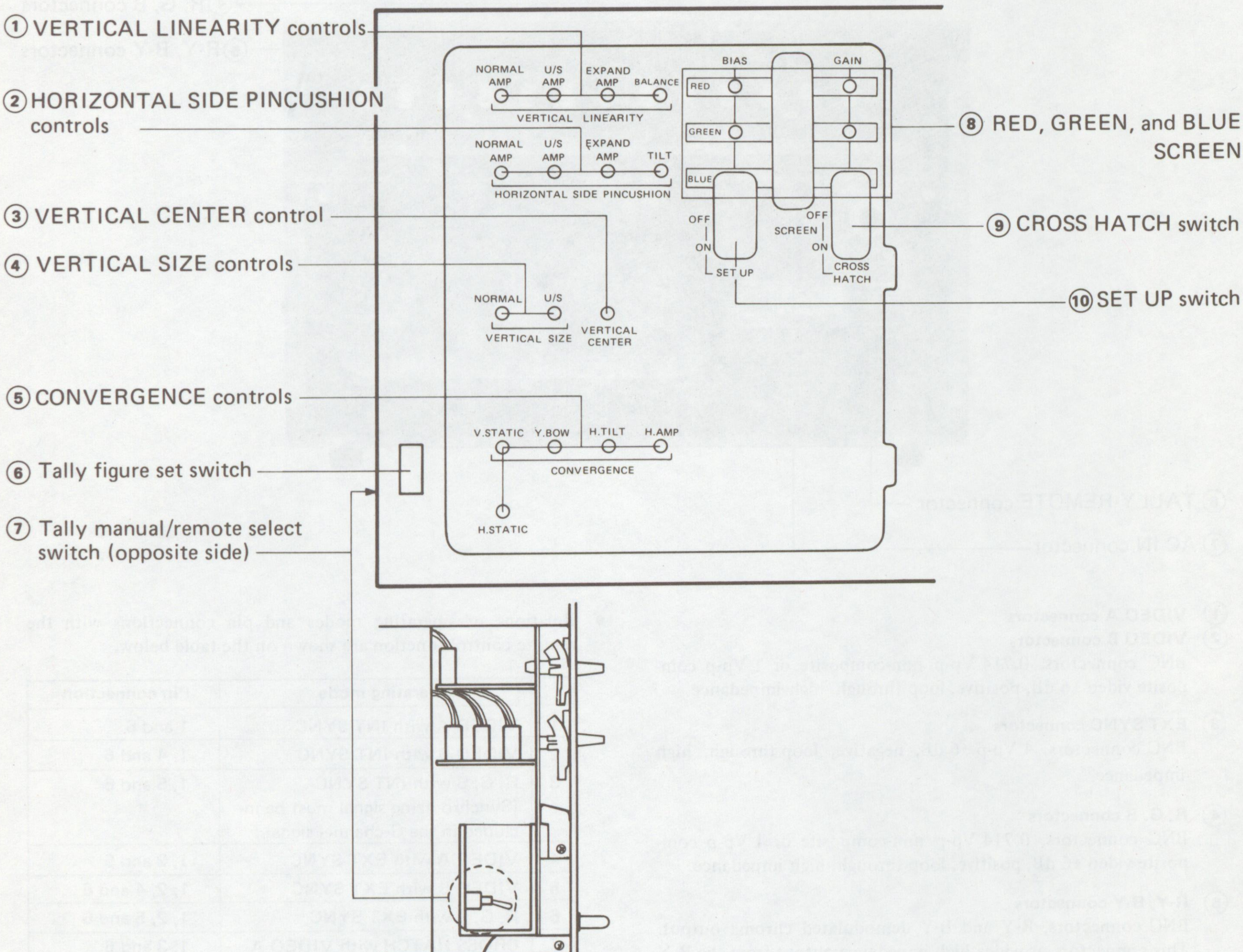
- Relations of operating modes and pin connections with the remote control function are shown on the table below.

	Operating mode	Pin connection
1	VIDEO A with INT SYNC	1 and 6
2	VIDEO B with INT SYNC	1, 4 and 6
3	R, G, B with INT SYNC (Synchronizing signal must be included in the G-channel signal.)	1, 5 and 6
4	VIDEO A with EXT SYNC	1, 2 and 6
5	VIDEO B with EXT SYNC	1, 2, 4 and 6
6	R, G, B with EXT SYNC	1, 2, 5 and 6
7	CROSS HATCH with VIDEO A	1, 3 and 6
8	CROSS HATCH with VIDEO B	1, 3, 4 and 6
9	CROSS HATCH with EXT SYNC	1, 2, 3 and 6

- The operating modes with the remote control function have priority to the modes selected with the front panel Operation Controls.

⑦ **AC IN connector**
For an ac power supply.

1-5-3. Sub control panel



- The following controls and switches are located inside the drawer.

① **VERTICAL LINEARITY controls**

NORMAL AMP, U/S AMP, EXPAND AMP: These controls allow the vertical linearity amplifier gains to be adjusted in the normal, underscanned, or expanded picture respectively.

BALANCE: This control allows the vertical linearity balance at the top and bottom of screen to be adjusted.

② **HORIZONTAL SIDE PINCUSHION controls**

NORMAL AMP, U/S AMP, EXPAND AMP: These controls allow the horizontal side pincushion amplifier gains to be adjusted in the normal, underscanned, or expanded picture respectively.

TILT: This control allows the trapezoidal-shaped picture to be corrected.

③ **VERTICAL CENTER control**
This control allows the vertical position of the picture to be adjusted.

④ **VERTICAL SIZE controls**

NORMAL
U/S: These controls allow the picture height gains to be adjusted in the normal or underscanned picture respectively.

⑤ **CONVERGENCE controls**

V. STATIC: This control allows the vertical convergence at the center of screen to be adjusted.

Y. BOW: This control allows the vertical convergence at the top and bottom of screen to be adjusted.

H. TILT: This control allows the horizontal convergence at the left and right sides of screen to be adjusted.

H. AMP: This control allows the horizontal convergence amplifier gains to be adjusted.

H. STATIC: This control allows the horizontal convergence at the center of screen to be adjusted.

⑥ **Tally figure set switch**
When the tally manual/remote select switch is set to manual (downward) position, desired tally figure display, from 0 to 9, can be selected with this switch.

⑦ **Tally manual/remote select switch**

manual (downward) position: Desired tally figure, from 0 to 9, can be displayed.

remote (upward) position: Tally lamp on or off can be remotely controlled.

⑧ **RED, GREEN, and BLUE SCREEN**
Each screen has an ON/OFF switch, BIAS and GAIN controls.

ON/OFF switches: These switches allow the appropriate beam to be turned on or off.

BIAS controls: These controls provide screen adjustment for low light color temperature.

GAIN controls: These controls provide screen adjustment for high light color temperature.

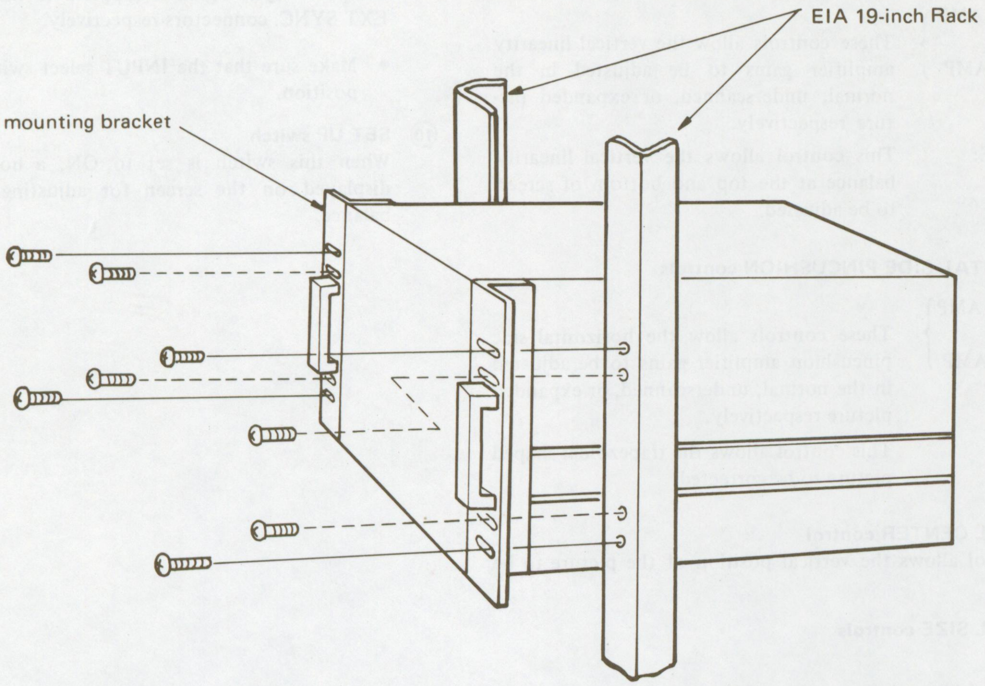
⑨ **CROSS HATCH switch**
When this switch is set to ON, the crosshatch pattern is displayed on the screen, provided that a composite video or composite sync signal is supplied to the VIDEO A (or B), or EXT SYNC. connectors respectively.

- Make sure that the INPUT select switch is not set to RGB position.

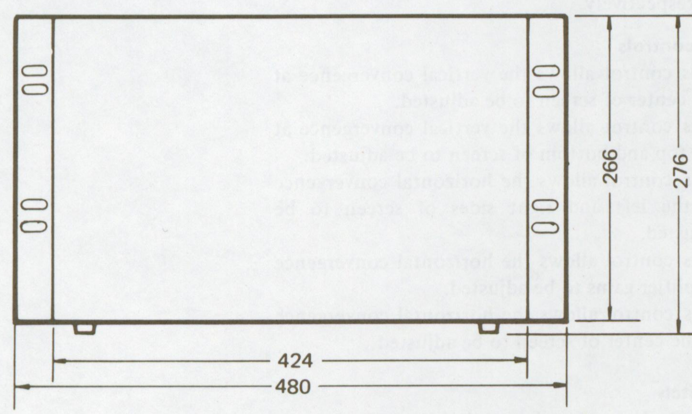
⑩ **SET UP switch**
When this switch is set to ON, a horizontal white bar is displayed on the screen for adjusting the low-level white balance.

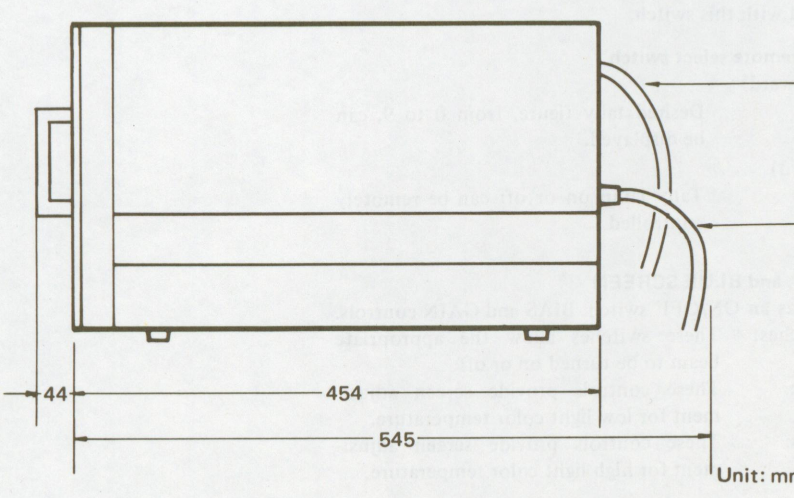
1-6. RACK MOUNTING

The BVM-1201 can be rack mounted in an EIA standard 19-inch rack as shown in the illustration below. Before mounting, remove the bottom feet (total of 4).

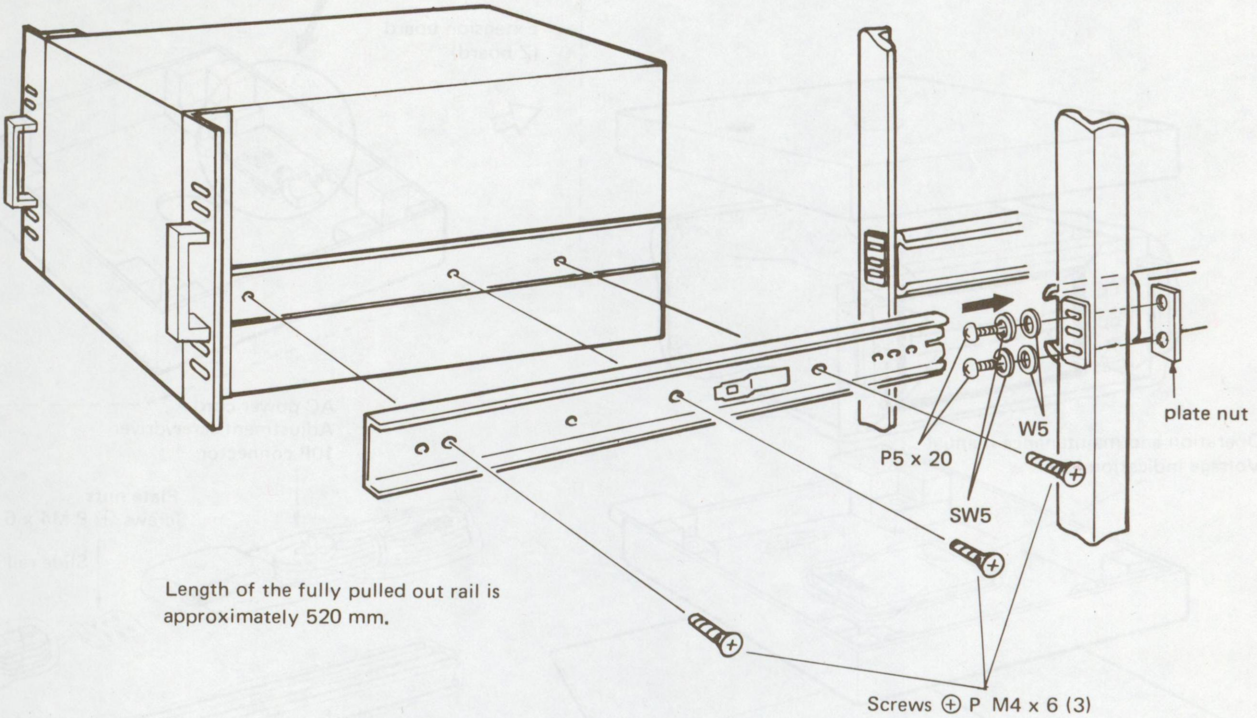


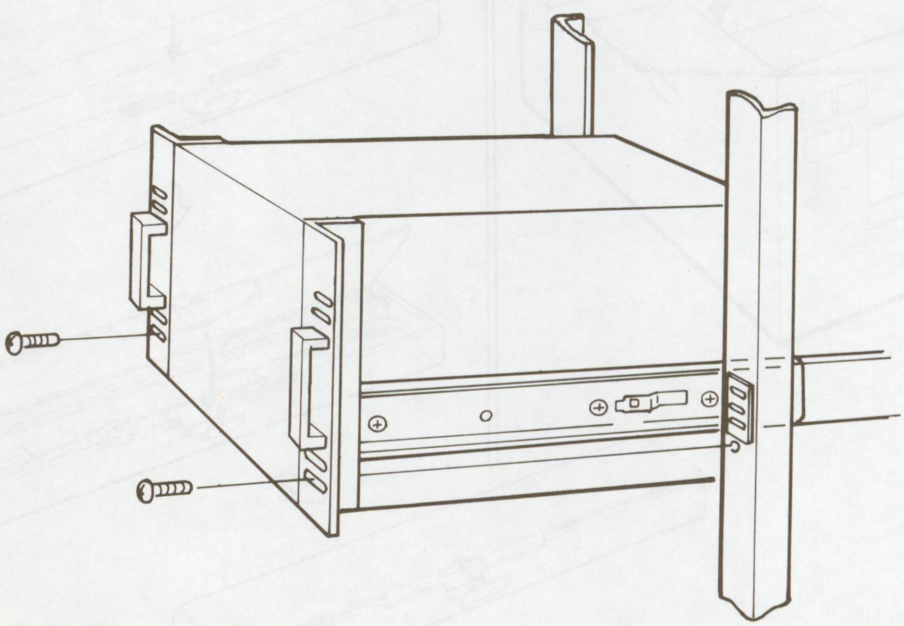
Dimensions



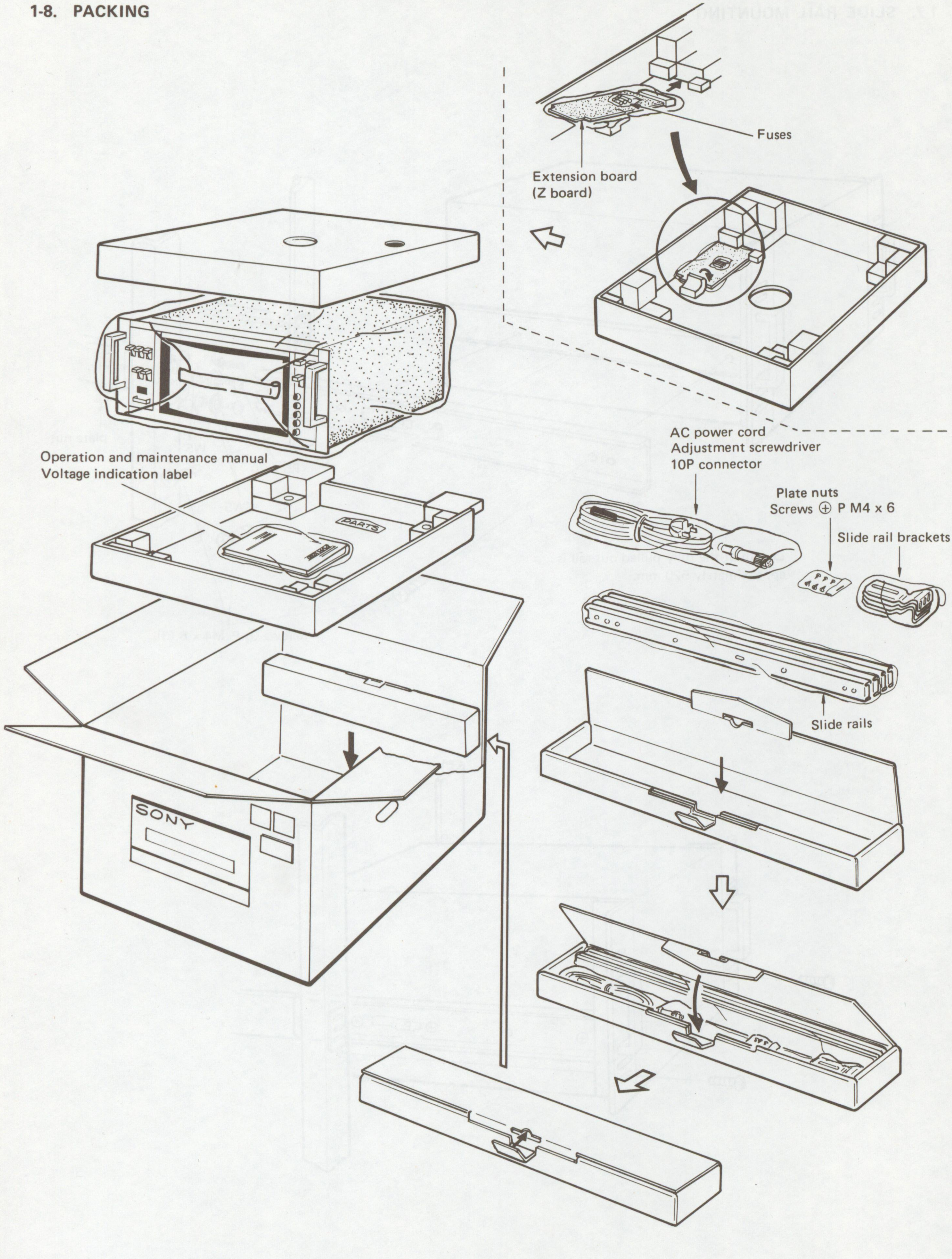


1-7. SLIDE RAIL MOUNTING





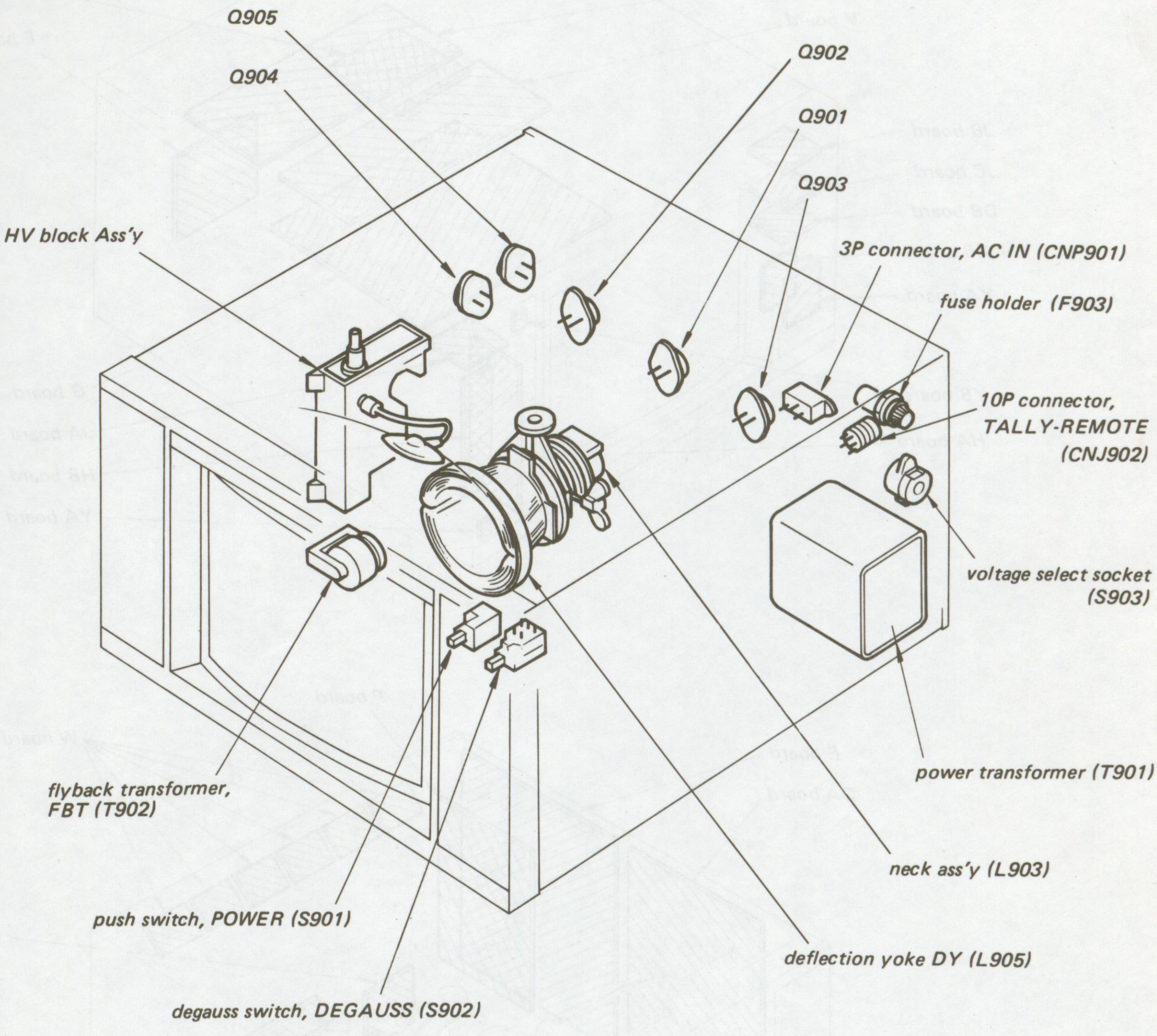
1-8. PACKING



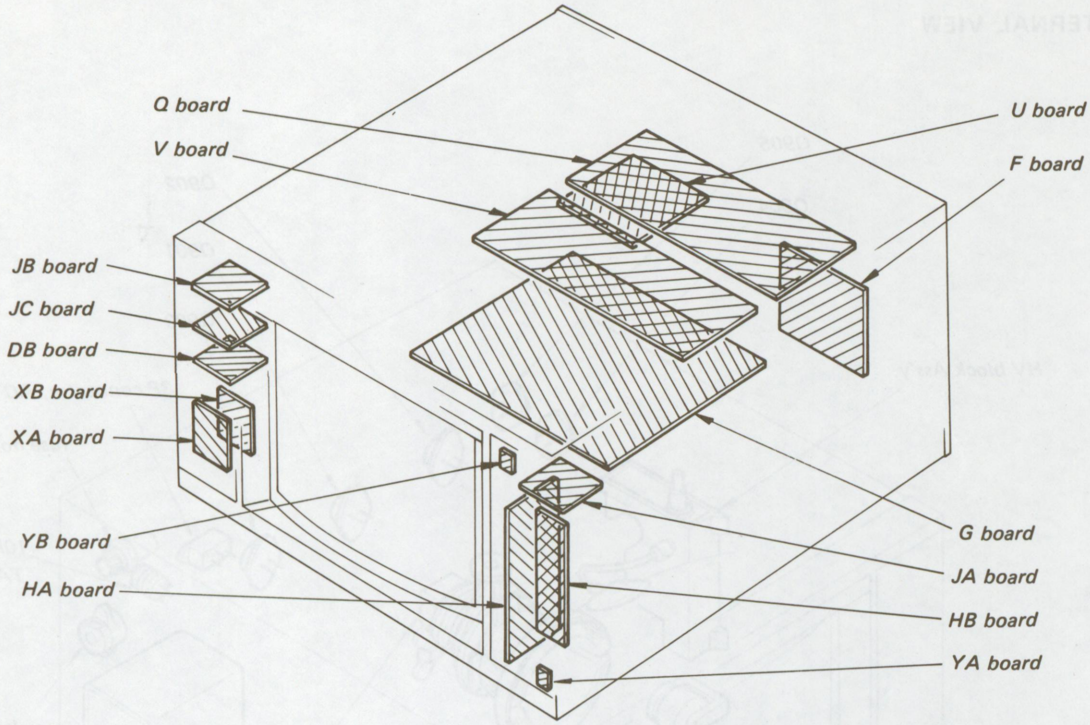
Fuses
Extension board
(Z board)
Operation and maintenance manual
Voltage indication label
PARTS
AC power cord
Adjustment screwdriver
10P connector
Plate nuts
Screws ⊕ P M4 x 6
Slide rail brackets
Slide rails
SONY

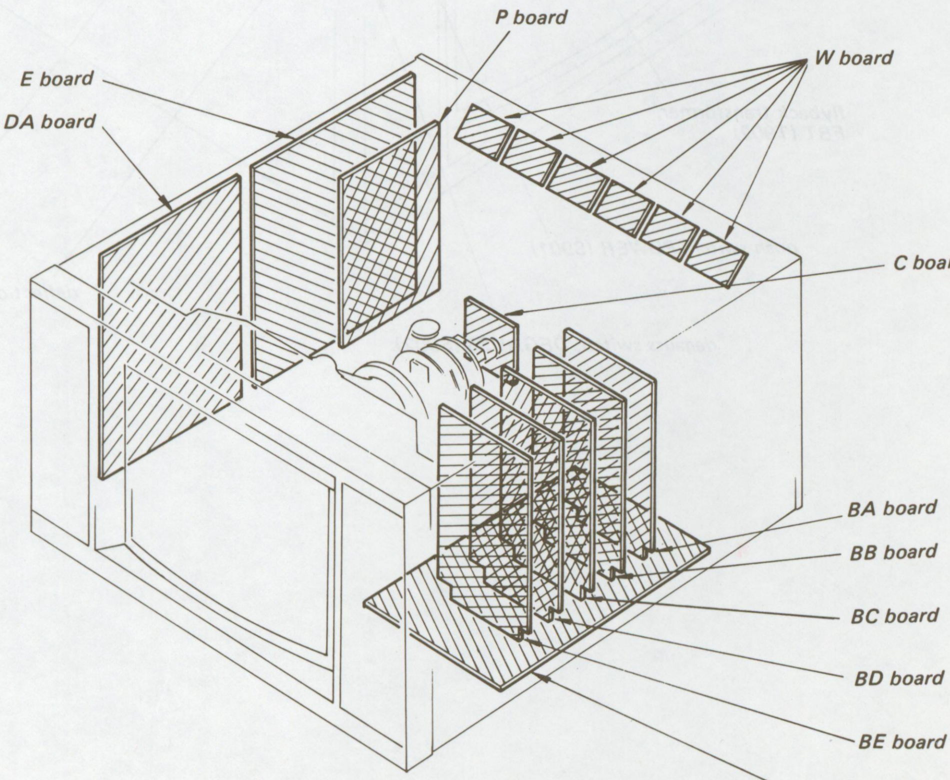
SECTION 2
OUT LINE

2-1. INTERNAL VIEW

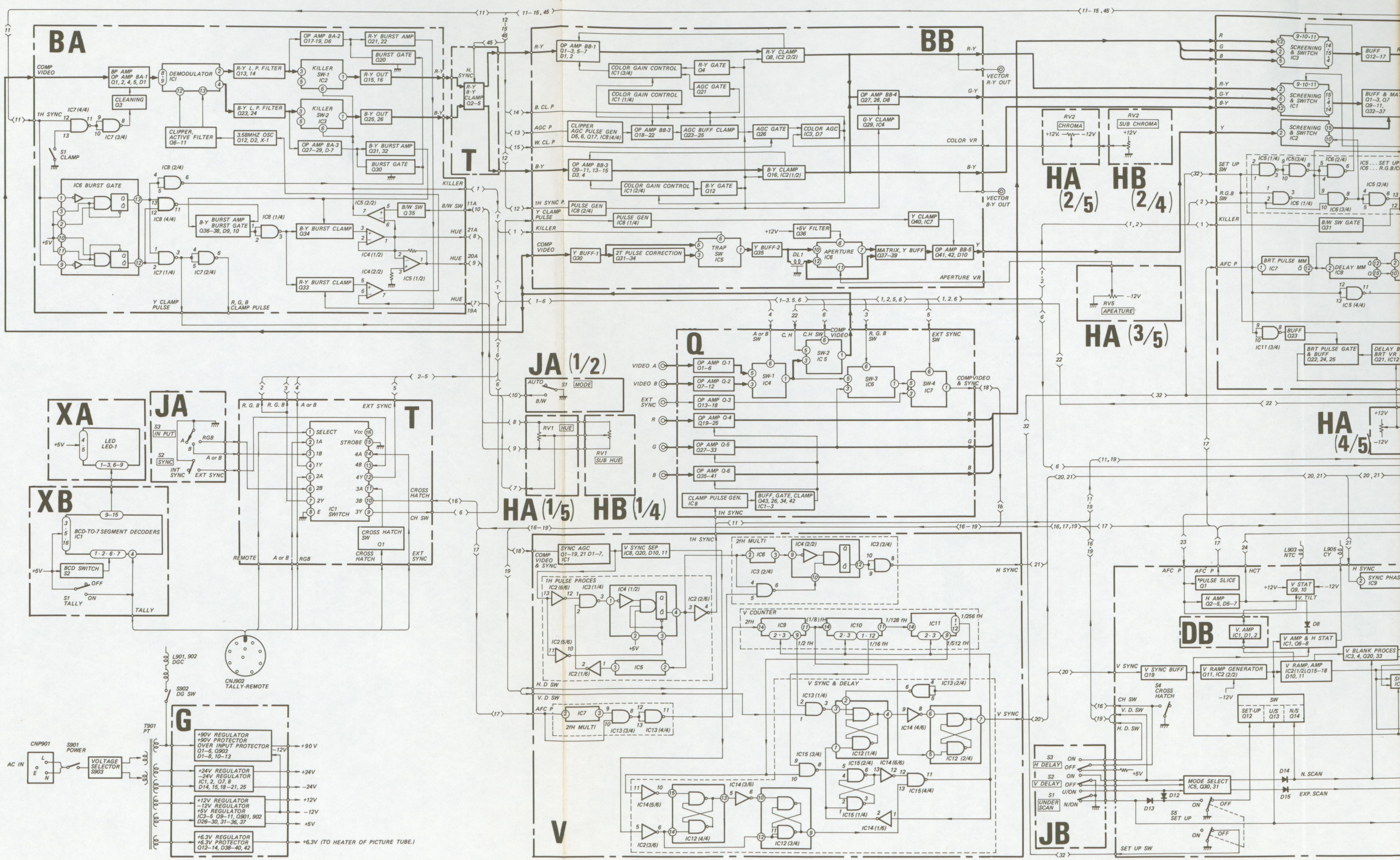


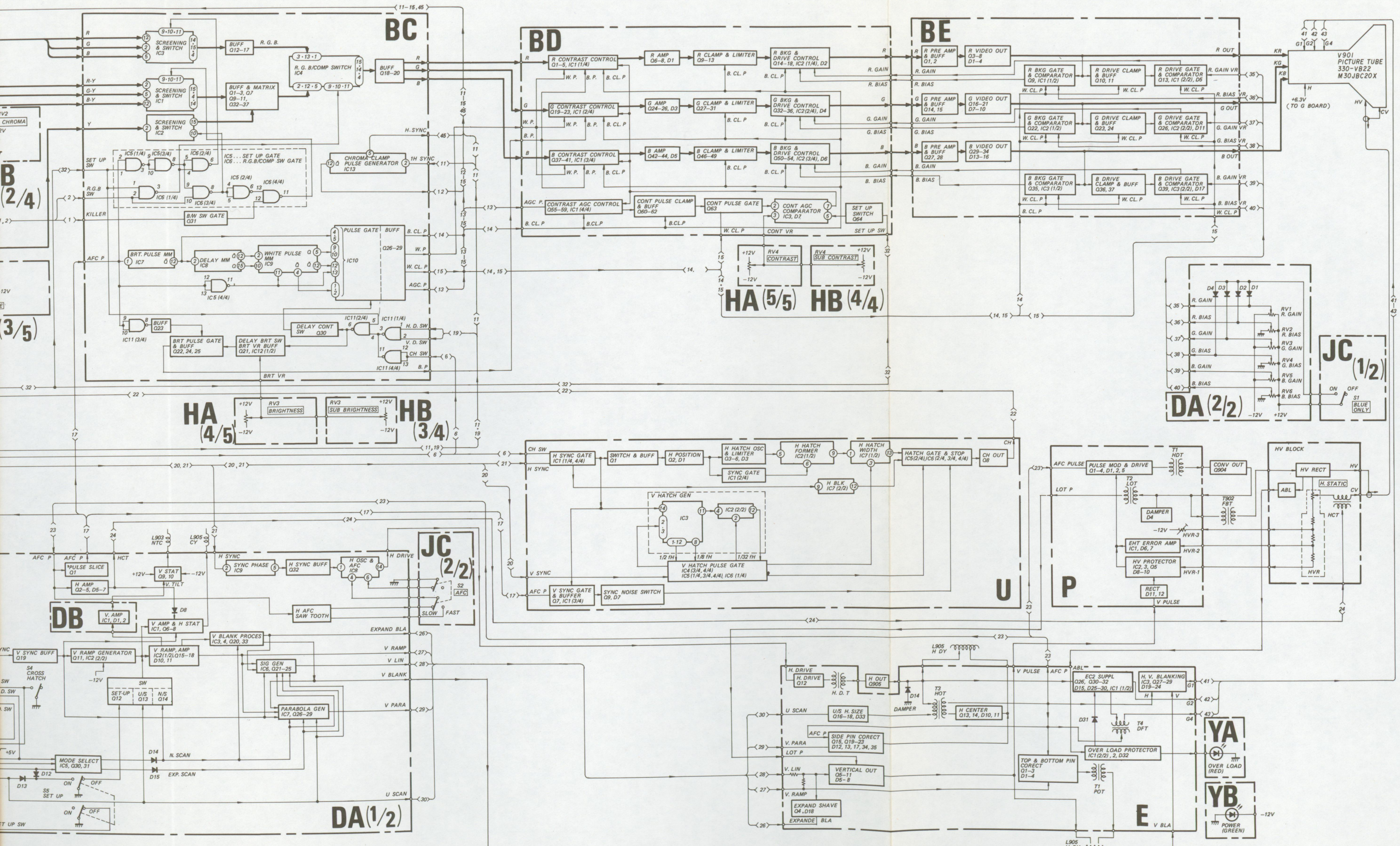
2-2. CIRCUIT BOARDS LOCATION





2-3. BLOCK DIAGRAM





BC
BD
BE
V901 PICTURE TUBE 330-VB22 M30JBC20X
SCREENING & SWITCH IC3
SCREENING & SWITCH IC1
SCREENING & SWITCH IC2
BUFF Q12-17
BUFF & MATRIX
R. G. B/COMP SWITCH IC4
BUFF Q18-20
CHROMA CLAMP PULSE GENERATOR IC13
B/W SW GATE Q31
BRT. PULSE MM IC7
DELAY MM IC8
WHITE PULSE MM IC9
PULSE GATE BUFF IC10
BRT PULSE GATE & BUFF Q22, 24, 25
DELAY BRT SW BRT VR BUFF Q21, IC12 (1/2)
DELAY CONT SW Q30
R CONTRAST CONTROL
G CONTRAST CONTROL
B CONTRAST CONTROL
R AMP Q6-8, D1
G AMP Q24-26, D3
B AMP Q42-44, D5
R CLAMP & LIMITER Q9-13
G CLAMP & LIMITER Q27-31
B CLAMP & LIMITER Q46-49
R BKG & DRIVE CONTROL
G BKG & DRIVE CONTROL
B BKG & DRIVE CONTROL
CONTRAST AGC CONTROL
CONT PULSE CLAMP & BUFF Q60-62
CONT PULSE GATE Q63
CONT AGC COMPARATOR IC3, D7
SET UP SWITCH Q64
R PRE AMP & BUFF Q1, 2
G PRE AMP & BUFF Q14, 15
B PRE AMP & BUFF Q27, 28
R VIDEO OUT Q3-8 D1-4
G VIDEO OUT Q16-21 D7-10
B VIDEO OUT Q29-34 D13-16
R BKG GATE & COMPARATOR
G BKG GATE & COMPARATOR
B BKG GATE & COMPARATOR
R DRIVE CLAMP & BUFF Q10, 11
G DRIVE CLAMP & BUFF Q23, 24
B DRIVE CLAMP & BUFF Q36, 37
R DRIVE GATE & COMPARATOR
G DRIVE GATE & COMPARATOR
B DRIVE GATE & COMPARATOR
+6.3V (TO G BOARD)
HA (5/5)
HB (4/4)
RV4 CONTRAST
RV4 SUB CONTRAST
HA (4/5)
HB (3/4)
RV3 BRIGHTNESS
RV3 SUB BRIGHTNESS
DA (2/2)
JC (1/2)
S1 BLUE ONLY
B (2/4)
(3/5)
CHROMA
U
H SYNC GATE
SWITCH & BUFF Q1
H POSITION Q2, D1
H HATCH OSC & LIMITER Q3-6, D3
H HATCH FORMER IC2(1/2)
H HATCH WIDTH IC7(1/2)
HATCH GATE & STOP
CH OUT Q8
SYNC GATE IC1(2/4)
H BLK IC7 (2/2)
V HATCH GEN
IC3
V HATCH PULSE GATE
V SYNC GATE & BUFFER Q7, IC1 (3/4)
SYNC NOISE SWITCH Q9, D7
P
PULSE MOD & DRIVE Q1-4, D1, 2, 5
T1 HDT
T2 LOT
CONV OUT Q904
DAMPER D4
T902 FBT
EHT ERROR AMP IC1, D6, 7
HV PROTECTOR IC2, 3, Q5 D8-10
RECT D11, 12
HV BLOCK
HV RECT
ABL
H. STATIC
HCT
HVR
JC (2/2)
S2 AFC
SLOW FAST
DB
V. AMP IC1, D1, 2
PULSE SLICE Q1
H AMP Q2-5, D5-7
V STAT Q9, 10
V. TILT
V AMP & H STAT IC1, Q6-8
H SYNC
SYNC PHASE IC9
H SYNC BUFF Q32
H OSC & AFC IC8
H DRIVE
H AFC SAW TOOTH
V BLANK PROCES IC3, 4, Q20, 33
V SYNC BUFF Q19
V RAMP GENERATOR Q11, IC2 (2/2)
V RAMP, AMP IC2(1/2), Q15-18 D10, 11
SIG GEN IC6, Q21-25
PARABOLA GEN IC7, Q26-29
S4 CROSS HATCH
SW
SET-UP Q12
U/S Q13
N/S Q14
MODE SELECT IC5, Q30, 31
N. SCAN
EXP. SCAN
S5 SET UP
EXPAND BLA
V RAMP
V LIN
V BLANK
V PARA
U SCAN
DA (1/2)
E
H DRIVE Q12
H OUT Q905
H. D. T
DAMPER
T3 HOT
L905 H DY
H CENTER Q13, 14, D10, 11
U/S H. SIZE Q16-18, D33
SIDE PIN CORECT Q15, Q19-23 D12, 13, 17, 34, 35
VERTICAL OUT Q5-11 D5-8
EXPAND SHAVE Q4, D18
TOP & BOTTOM PIN CORECT Q1-3 D1-4
T1 POT
EC2 SUPPL Q26, Q30-32 D15, D25-30, IC1 (1/2)
H. V. BLANKING IC3, Q27-29 D19-24
T4 DFT
OVER LOAD PROTECTOR IC1(2/2), 2, D32
L905 V DY
YA
OVER LOAD (RED)
YB
POWER (GREEN)

SECTION 3
CIRCUIT DESCRIPTION

3-1. COLOR DECODER (BA BOARD)

The composite video signal applied to the base of Q1 goes through the series resonance circuit consisting of C4 and L1. It is amplified in the OP AMP BA-1 (Q4 and Q5) and the chrominance signal is applied to pins 8 and 9 of demodulator IC1.

3.58 MHz OSC (Oscillator)

The subcarrier oscillator is a crystal controlled OSC constructed with Q12, X-1, and D2. It is controlled by variable reactor diode D2 within a range of ±500 Hz. Q10 and Q11 form a limiter to eliminate the amplitude variation of the 3.58 MHz OSC. L4, C18, C19, R27, and R28 circuit connected to Q10 collector is the bridge T trap construction whose center frequency is 3.58 MHz and it rejects the side bands.

DEMODULATOR

IC1 is a differential type demodulator to which the subcarrier is applied through Q6 and Q9. The B-Y phase is shifted 90° in the active filter circuit formed with Q7 and Q8. The bandwidth of the demodulator output is limited in the low pass filter. The R-Y output is obtained at Q14 and the B-Y output at Q24.

BURST GATE CIRCUIT

The B-Y signal obtained at Q24 is amplified in OP AMP BA-3 (Q27, Q28, Q29). Q30, FET for a burst gate, is normally in a conducting state and no signal appears at the gate of FET Q31. Q30, however, is not conducting only in the burst period and the signal in the burst period appears at the gate. The R-Y signal is processed in the same manner.

BURST GATE GENERATOR

The monostable multivibrator of IC6 generates the burst gate pulse on the basis of the back porch of the sync pulse applied to pin 1. The output from pin 13 of IC6 is level-converted in the NAND circuit of IC8 (4/4) to drive Q20 and Q30.

BURST CLAMP PULSE GENERATOR

The B-Y burst signal obtained at Q32 is amplified in the operation amplifier consisting of Q36 and Q37 so as to turn on and off burst separator Q38. The burst gate pulse produced in IC6 and the burst signal of Q38 are processed in the AND gate in order to increase immunity against noise. The waveform and the level of the collector output signal of Q38 are adjusted in the NAND circuit of IC8 (1/4) to drive FETs Q34 and Q33.

AUTOMATIC PHASE CONTROL (APC)

APC controls the 3.58 MHz OSC to detect the R-Y burst signal period. The R-Y output in the burst signal period goes through buffer amplifier Q22 and is clamped for the burst signal period in FET Q33. The voltage charged in C54 drives the operation amplifier at pin 5 of IC4 (2/2). IC4 (2/2) detects the potential difference between pins 5 and 6, amplifies the difference, and applies it to pin 7. The IC4 (2/2) is an active filter and its time constant is determined by R90, C57, and R89. The output from pin 7 of IC4 (2/2) controls variable reacter D2 of the 3.58 MHz OSC to form an APC loop.

HUE CONTROL

The B-Y burst signal obtained at Q32 is clamped by Q34, integrated in the R95 and C60 circuit, and applied to pin 3 of IC4 (1/2). The output impedance of this signal is converted by IC4 (1/2) and the output signal is shifted 180° out of phase by IC5 (1/2). A potentiometer is formed on the HA board on the basis of the voltage of 180° out-of-phase and the one in phase. The output of the potentiometer is applied to pin 6 of IC4 (2/2) via R91 in order to vary the reference for the hue control.

KILLER CIRCUIT

The killer detects the B-Y burst and controls IC2 and IC3 on the BA board and IC1 on the BC board. The output from pin 1 of IC4 (1/2) drives IC5 (2/2), is compared with the reference voltage at pin 5 of IC5 (2/2) and amplified in IC5 (2/2). The output of IC5 (2/2) is used as the killer voltage. Pin 7 of IC5 (2/2) is negative when the burst signal appears and positive when the burst signal does not. The output of IC2 (pin 1) is fed to the color gain control circuit through Q15 and Q16, and the output of IC3 (pin 1) is also fed to the color gain control circuit through Q25 and Q26.

Note: Be sure to set S1 to the position shown by the arrow.

3-2. COLOR GAIN CONTROL AND LUMINANCE AMP (BB BOARD)

COLOR GAIN CONTROL

Color gain control controls the gains of the R-Y and B-Y color difference signals. The pulse produced by a waveform shaping of the horizontal flyback pulse is applied to Q17. Since the pulse height varies in each of the H. delay and the V. delay modes, the pulse is switched by Q17 for a level stabilization in order to drive IC8 (4/4). The IC8 (4/4) output is amplified in Q18 and its gain is controlled in IC1 (4/4). The Q18 output drives Q22 and the Q22 output clamps Q23.

The clamp position is after the back porch of the horizontal flyback pulse. The clamped signal goes through Q24 and Q25 to Q26 where it is gated during the horizontal flyback pulse period. The signal gated at Q26 is converted into dc and phase-inverted in IC3 (1/2) so as to change the dc voltages at pins 3 and 8 of IC1. Since IC1 is an FET used when the drain-source voltage is 0 volt, its resistance can be varied equivalently with the gate voltage. This means that emitter resistance of Q18 varies and consequently the gain of Q18 varies. This loop forms an NF (=Negative Feedback) loop. The gain control can be performed by varying the dc voltage at pin 3 of IC3 (1/2). IC1 controls the gains of the R-Y and the B-Y signals in the same manner.

R-Y, G-Y, AND B-Y AMPS AND CLAMPS

The R-Y signal is applied to the base of Q1 where its gain is controlled and is amplified in the OP AMP BB-1 (Q5 through Q7). The signal from the collector of Q7 is gated in FET Q8 during the horizontal sync period, converted to dc in IC2 (2/2), and controls the base voltage of Q2 so that the voltage at pin 5 of IC2 (2/2) becomes 0 volt during the horizontal sync period of Q7. This circuit operation is also an NF loop operation. The processing of the B-Y signal is the same as that of the R-Y signal.

The R-Y and the B-Y signals are added at a constant ratio, applied to the emitter of Q27, and phase-inverted in operation amplifier of Q27 and Q28. Thus the G-Y signal is obtained. The pin 1 output of IC4 is connected to the base of Q27, so that the circuit forms an NF loop. The NF loop clamps the horizontal sync period to 0 V.

LUMINANCE AMPLIFIER

The composite video signal is applied to the base of Q30. In the black and white mode, it is applied to the video switcher in IC5 from the emitter of Q30. The killer voltage from IC5 (2/2) on the BA board is applied to pin 6 of IC5. In the black and white mode, the signal inputted to pin 3 of IC5 outputs from pin 1 and enters into Q35. DL1 (Delay Line) is connected to the emitter of Q35 and forms an aperture correction circuit. The signal passed through DL1 is applied to pin 12 of IC6. The signal before entering DL1 and the

signal which entered DL1 and was reflected (i.e., the signal passed DL1 twice) are added and applied to pin 10. Only the component to be boosted is produced in IC6 and outputted from its 7 pin. This signal is applied to Q37 and added to the signal which has passed the DL1 and applied to the base of Q38 in the collector of Q37. The resultant signal is applied to the base of Q39.
The signal of Q39 emitter is applied to the OP AMP BB-5 (Q41 and Q42) via DL2. The OP AMP BB-5 output is dc-converted in IC7 (2/2) to control Q40 and the dc-converted signal controls Q41 emitter so that the OP AMP BB-5 output is clamped to 0 volt during the horizontal sync period like the R-Y clamp circuit. It should be noted that the gate pulse applied to Q40 is in phase with the back porch of the horizontal pulse.

3.58 MHz TRAP AND PHASE COMPENSATION

The output signal of Q30 in the color mode is applied to Q31 after its subcarrier is rejected in the bridged T trap consisting of R86, C48, C49, and L1. The R91, L2, C52, Q32, and Q33 circuit is an active filter for the 3.58 MHz phase correction. The signal is applied to pin 3 of IC5 from Q34 and the resultant signal appears at pin 1 of IC5.

3-3. R, G, & B SWITCHERS (BC BOARD)

RGB MODE

The Red, Green, and Blue signals are inputted to pins 12, 2, and 5 of IC3 and outputted from pins 14, 15, and 4 respectively. The Red signal is applied to pin 1 of IC4 via the Q12 and Q13 circuit. The Green signal is fed to pin 13 of IC4 through Q14 and Q15. The Blue signal is supplied, through Q16 and Q17, to pin 3 of IC4.
The decorded color difference signal and the Y signal are cut off by IC1 and IC2 respectively. At this time +5 V bias is applied to each of pins 9, 10, and 11 of IC1 and pin 10 of IC2.

COMPOSITE VIDEO MODE

The decoded color difference signals of R-Y, G-Y, and B-Y are inputted to pins 2, 5, and 12 of IC1 and outputted from pins 15, 4, and 14 respectively.
The R, G, and B signals inputted to IC3 are cut off when the +5 V bias is applied to pins 9 through 11 of IC1.
The Y signal is inputted to pin 2 of IC2 and outputted from pin 15. The R-Y signal, output from pin 15 of IC1, goes through Q1 and Q32 and becomes the ouput of Q35. The Y signal outputted from pin 15 of IC2 goes through Q7 and is matrixed with the R-Y signal, output of Q35, by R29 and R10. The red signal is supplied to pin 2 of IC4 via Q9.
Similarly the G-Y signal is matrixed with the Y signal in R17 and R30, and the B-Y signal is matrixed with in R24 and R31. The Green signal is inputted to pin 12 of IC4 and the Blue signal to pin 5.

R, G, and B SWITCHERS

The R, G, and B signals applied to IC4 are outputted from pins 15, 14, and 4 of IC4 respectively. When 0 volt is applied to pins 9, 10, and 11 of IC4, the composite system R, G, and B signals are outputted and when +5 volts is applied to them, the RGB system signals are outputted.

SCREENING

Screening is performed on the transit signal in IC3 and IC2 during the horizontal blanking period, which is for inserting the pulses for brightness and contrast control. The screening level is set to 7.5 IRE of the input signal by RV2 and RV1.

The pulse which is +5 V during the horizontal blanking period and 0 V in other period is applied to pins 9, 10, and 11 of IC3. The +5 V is also applied to pin 10 of IC2.
Similarly the pulse which is +5 V during the horizontal blanking period is applied to pin 10 of IC2 and the +5 V is applied to pin 9, 10, and 11 of IC3 in the COMP system mode.

PULSE GENERATOR

Various pulses are produced from the wave-shaped horizontal blanking pulse in the monostable multivibrator IC.
The waveform-shaped horizontal blanking pulse is applied to pin 1 of IC7 (1/2) and approx. 0.4 μS pulse is produced on the basis of the front edge change of the blanking pulse by R63, C19, and IC7 (1/2). The produced pulse appears at pin 4 of IC7 (1/2). The pulse is applied to pin 10 of IC7 (2/2). Approx. 3.3 μS pulse is produced on the basis of the back edge change of the applied pulse by R64, RV3, C20, and IC7 (2/2), and appears at pin 12 of IC7 (2/2). This pulse is shaped to a positive polarity pulse of approx. 7.5 Vp-p by IC10 (2/4), R65, and R66, and the Q26 output becomes the bright clamp pulse.
Similarly R68, C21, and IC8 (1/2) produce a pulse of approx. 0.4 μS on the basis of the back edge change of the pulse applied to pin 12 of IC7 (2/2) and the produced pulse appears at pin 4 of IC8. Then R69, C22, and IC8 (2/2) produce a pulse of approx. 0.4 μS on the basis of the back edge change of the pulse produced in IC7 (2/2) and the resultant pulse appears at pin 2 of IC8 (2/2). R70, RV4, C23, and IC9 (1/2) produce a pulse of approx. 3.3 μS on the basis of the back edge change of the pulse at pin 2 of IC9 (1/2) and the produced pulse is obtained at pin 4 of IC9 (1/2). This pulse is waveform-shaped in IC10 (1/4) and a positive polarity white clamp pulse of approx. 7.5 Vp-p is obtained as the output from Q28.
R74, C24, and IC9 (2/2) produce a pulse of approx. 4.5 μS on the basis of the front edge change of the output pulse of pin 15of IC8 and the pulse appears at pins 5 and 12 of IC (2/2). But the back edge change of this pulse is determined in IC5 (3/4) by the back edge change of the input blanking pulse.
The output from pin 5 of IC9 goes to IC10 (3/4) for a waveform shaping and becomes a negative polarity white pulse of approx. 4.5 Vp-p as the Q27 output. The pin 12 output of IC9 (2/2) and the IC5 (4/4) output are AND-gated and wave-shapted in IC10 (4/4) in order to be a negative polarity pulse of approx. 4 μS, 1 Vp-p for the contrast control on the basis of the front edge change of the input blanking pulse as the Q29 output.
The input blanking pulse goes through IC11 (3/4) and Q23, gated in Q22 only during the horizontal blanking period, and becomes the bright pulse after it passes through Q24 and Q25. The level of this pulse is equal to the one of the pin 1 output of IC12 and based on the dc voltage at pin 3 of IC12 (1/2).
Pin 3 of IC12 (1/2) is connected to RV3 on the HA board and RV3 on the HB board via R93 and the dc voltages of these variable resistors control the pulse level of Q25 output.

3-4. VIDEO OUT (BD and BE BOARDS)

CONTRAST CONTROL (BD BOARD)

The wave-shaped horizontal flyback pulse is applied to the base of Q55. Variable resistance element IC1 (4/4) is used as the emitter resistor of Q55 and the gain of the amplifier Q55 is controlled by varying the resistance value of IC1 (4/4).
The output of Q55 goes to Q59 and to Q60 where it is clamped during the horizontal flyback pulse period. The clamped signal goes through Q61 and Q62, is gated in Q63 immediately after the horizontal flyback pulse. The gating signal is converted to dc in IC3 (1/2), goes through IC3 (2/2), and applied to pin 8 of IC1 (4/4), IC1 (4/4) controls the Q55 gain. The dc output from IC3 (2/2) is connected to pin 8 of IC1 (1/4), pin 12 of IC1 (2/4), and pin 3 of IC1 (3/4), which enables the simultaneous gain controls of the R, G and B signals inputted to the bases of the amplifiers Q1, Q19 and Q37 respectively.
The dc output of IC3 (2/2) varies depending on the dc voltage at pin 3 of IC3 (1/2) and can be controlled with RV4 (CONTRAST) on the HA board and RV4 (SUBCONTRAST) on the HB board.

WHITE PEAK LIMITER (BD BOARD)

The bright pulse and white pulse obtained by the waveform-shaping of the horizontal flyback pulse are added to the gain-controlled Red output of Q1 via R14 and R15. The resultant signal goes through Q5 and operation amplifier Q6, Q7, and Q8, and clamped in Q9. The clamp is performed at the bright pulse period. The clamped signal goes to the limiter circuit consisting of Q11 and Q12 via Q10, the limiter circuit cuts of the video signal above the reference level. The above operation is applied on the Green signal of Q19 and the Blue signal of Q37.

SET-UP SWITCH (BD BOARD)

The Q64 base is connected to ground by S5 (SET-UP switch) on the DA board in the SET-UP mode, and the output dc voltage of IC3 (2/2) is increased and the amplification gains of Q1, Q19, and Q37 is minimized. Thus each of the R, G, and B outputs is stopped.

R,G, AND B BACKGROUND CONTROL AND VIDEO OUTPUT AMP (BD AND BE BOARDS)

The Red signal of the output from the limiter circuit consisting of Q11 and Q12 on the BD board enters the base of the amplifier Q14 via Q13. The gain of the Q14 output is controlled in IC2 (1/4) and its dc level is controlled in Q15. The output is supplied to Q18, amplified in Q1 on the BE board, and enters the cascade NF amplifier Q3, Q4, Q5, and Q6 via Q2 on the BE board.
The output from Q6 on the BE board goes, through the BUFFER amplifier Q7 and Q8, to the R cathode of the picture tube.
The output signal from Q7 and Q8 is divided by R21 and R22 and gated in Q9 during the bright pulse period. The gated voltage is converted to a dc voltage in IC1 (1/2) and applied to the base of Q15 on the BD board. These circuits form an NF loop. The bright pulse dc level of the output from Q7 and Q8 is controlled by the dc voltage at pin 5 of IC1 (1/2). The Green signal, output from Q20 and Q21 on the BE board and the Blue signal output from Q33 and Q34 are processed in the same manner as in the Red signal.

R,G, AND B DRIVE CONTROL (BD AND BE BOARDS)

The Red signal output from Q7 and Q8 on the BE board is voltage-divided by R31 and R32. It goes through Q10 and is clamped in Q11 during the bright pulse period. The white pulse period of the clamped signal is gated in Q13. The gated voltage is converted to a dc voltage in the R39, C15, and IC1 (2/2) circuit, and applied to variable resistance element IC2 (1/4) on the BD board, the resistance of IC2 (1/4) determines the amplification gain of Q14.
The above circuit forms the NF loop like the background control circuit. The white pulse level of the output signal from Q7 and Q8 on the BE board is controlled by the dc voltage at pin 3 of IC1 and the signal level is also controlled at the same time. The processings of the Green signal output from Q20 and Q21 on the BE board and the Blue signal output from Q33 and Q34 are the same with that of the red signal.

3-5. VERTICAL DEFLECTION AND AFC (DA BOARD)

VERTICAL RAMP WAVE GENERATOR

The vertical trigger pulse is applied to the emitter of Q19 from pin 5 of the connector D-12. The signal whose waveform was shaped in Q19 is supplied to the base of Q11. Q11 and IC2 (2/2) form a ramp generator. When the vertical trigger pulse is not applied to the Q11 base, −12 V power is applied through R42 to the integrator consisting of R42, C25, and IC2 (2/2) and the power is integrated. When the vertical trigger pulse is applied to the base of Q11, C25 is shorted through R43 and the voltages at pin 6 and pin 7 of IC2 (2/2) become the same. The voltage at pin 6 is equal to the one at pin 5, i.e., 0 V. Then the sawtooth wave whose trigger period is 0 V is obtained at pin 7 of IC2 (2/2) as the vertical ramp.

VERTICAL AMPLITUDE SWITCH

The ramp signal obtained at pin 7 of IC2 (2/2) varies the V. size by switching Q12 in the SET-UP mode, Q13 in the UNDERSCAN mode, or Q14 in the NORMAL SCAN mode. The output from IC2 (2/2) drives IC2 (1/2) whose output from pin 5 of connector D-8 drives the vertical out circuit on the E board.

VERTICAL SINE WAVE GENERATOR

The output from pin 1 of IC2 (1/2) is integrated in R93 and C40 to be a parabolic waveform. It is amplified in IC6 (1/2) and becomes a sine wave after passing through integrator consisting of R103, C45, and IC6 (2/2). The sine wave is supplied to the vertical out circuit on the E board from pin 6 of connector D-8 for linear correction. Q22, Q23, and Q24 are for varying the gain of IC6 (1/2) in the NORMAL, UNDERSCAN, and EXPAND SCAN modes respectively.

VERTICAL BLANKING

The pulse width of the vertical blanking is changed in each of the NORMAL, UNDERSCAN, and EXPAND modes. In the NORMAL mode, the vertical trigger pulse of D-12 drives Q20 and then drives the monostable multivibrator in IC4. The pulse width of this monostable multivibrator is longer a little than the one of the vertical trigger oulse. The pin 3 output of IC4 is supplied to the blanking circuit on the E board from pin 3 of connector D-8 and drives Q21 to clamp pin 3 input of IC6 (1/2) which is the parabola generator for the vertical sine wave generator, Q21 makes pin 3 zero V during the vertical trigger period. The vertical trigger pulse gates Q25 and clamps the vertical trigger period of the vertical sine wave generator. In the UNDERSCAN mode, the operation is identical to that in the NORMAL SCAN mode but Q33 is in the non-conductive state and the output pulse width of IC4 is narrow. The pulse width of IC3 is determined by R71 and C34, and the one of IC4 by R78, C36, and C71.
Since the IC2 (1/2) output is large in the EXPAND mode, the output is clipped by the voltage determined in the bases of Q15 and Q16 through D10 and D11. When Q15 and Q16 conduct, the output is matrixed in the Q18 base and the signal switched by Q18 drives IC3. IC3 detects the negative going and acts as a monostable multivibrator feeding the extra pulse generated in the EXPAND mode through R75 for canceling the pulse with the vertical trigger pulse, the output of IC3 drives IC4, and IC4 produces the blanking pulse.

PARABOLA WAVE FOR HORIZONTAL SIDE PINCUSHION

The parabola waveshape signal for the side pincushion correction is produced as follow. The sawtooth wave of IC2 (1/2) is integrated by C46 and R109. The signal goes to IC7 (2/2) and is phase-inverted in IC7 (1/2). The parabola waveshape signal drives the pincushion correction circuit from pin 2 of connector D-8.

VERTICAL PARABOLA WAVE FOR Y BOW CORRECTION

The output from IC2 (1/2) is integrated by IC1 (2/2), R23, and C21 to be the parabola wave. The IC1 (2/2) output goes through IC1 (1/2), Q7, and Q8 to the convergence yoke (CY) and returns to R30. In the dc loop, the pin 2 of IC1 (1/2) is connected to similar loop of the signal and this loop returns to R30. The circuit forms the NF loop. The signal corrects the Y bow convergence and the dc loop acts as follow. The horizontal parabola wave supplied from connector D-5 to the horizontal convergence transforemer (HCT) in the high voltage block is rectified in D8. The bias voltage of IC1 (1/2) is varied with the voltage in order to vary the current flow in the convergence yoke for preventing a convergence loose at the center on the picture tube.

PARABOLA WAVE FOR HORIZONTAL CONVERGENCE

The horizontal flyback pulse from pin 4 of connector D-7 is integrated in L1 and C15 and becomes the parabola wave. Similarly the sawtooth wave is produced in L2 and C14. The produced sawtooth wave and the parabola wave are mixed together in the base of Q3. The positive or negative sawtooth wave is applied to the Q3 base depending on the position of adjustable resistor RV8. The Q3 output is amplified in push-pull amplifier Q4 and Q5 and outputted from connector D-5 in order to drive the horizontal convergence transformer (HCT) in the HV block.

H. AFC and PICTURE PHASE CIRCUIT

The H. sync signal from pin 6 of connector D-12 drives pin 2 of IC9. IC9 is a monostable multivibrator making the thin pulse determined by R145, RV26, and C66 on the basis of the front edge change of the H. sync. The pin 13 output of IC9 drives pin 9 of IC9 and a pulse of 5 μS width is produced by RV25, R144, and C65. This pulse drives the emitter of Q32 in order to drive pin 1 of IC8 for H. AFC. The H. pulse phase to AFC can be varied by adjusting resistor RV26 and the deflection phase varies. Thus the picture phase on the picture tube can be adjusted. Regarding the H. AFC, the horizontal flyback pulse signal is applied to the L4, C63, R130 circuit and to the L3, C54, R129 circuit. The signals from these two circuits go through connector D-13 and selected by the AFC switch. The selected one is applied to pin 4 of IC8. The amplitude of the signal passed through the L4, C63, R130 circuit is smaller than that of the signal passed through the L3, C54, R129 circuit. Consequently the loop gain decreases and AFC becomes slow. The time constant of H. AFC is varied by connecting C58 and C59 in parallel in order to vary the frequency characteristic.

SCANNING SWITCH

The mode switching of NORMAL, UNDER, and EXPAND SCANNING is performed as follows. The voltage selected with the switch connected to connector D-11 is applied to the NAND circuit in IC5 and the logic circuit consisting of Q30 and Q31 so as to control transistors Q27, Q28, Q29, Q22, Q23, and Q24. Thus the scanning size can be controlled.

3-6. Y. TILT AND V. TILT CORRECTION CIRCUITS (DB BOARD)

The V cycle sawtooth wave current flows into the CY coil for the correction of the vertical convergence. The correction value of the vertical convergence is changed by turning the RV4 and the vertical convergence of the top and bottom of the picture tube is corrected by flowing the V cycle sawtooth wave current into the neck twist coil (N.T.C.). This correction value is changed by turning the RV 1 through 3.

3-7. HORIZONTAL AND VERTICAL DEFLECTION OUTPUT CIRCUIT (E BOARD)

HORIZONTAL DEFLECTION CIRCUIT

The horizontal deflection switching signal synchronized with the H. sync of the input signal is connected to pin 1 of connector E-3 from the DA board.

This switching signal enters the base of horizontal deflection drive transistor Q12 and its output is connected to the base of the H. OUT transistor on the DEF heat sink from T2 HDT (horizontal drive transformer).

The collector of the H. OUT transistor is connected to the horizontal deflection yoke and T3, HOT (Horizontal Output Transformer). The HOT supplies the dc power supply to the H. OUT transistor. One of the secondary winding of the HOT produces the horizontal center adjusting power supply in D10 and D11 and the horizontal center is adjusted in the Q13, Q14, and RV4 circuit. The other winding is the AFC pulse winding and connected to the DA board via connector E-3. Q16 through Q18 vary the supply voltage to the HOT and lower it approx. 10% in the UNDERSCAN mode.

SIDE PINCUSHION DISTORTION CORRECTION CIRCUIT

The parabola signal with V cycle comes from pin 2 of connector D-8 to pin 2 of connector E-2. The parabola signal and the AFC pulse from the HOT T3 are supplied to the P.W.M. (Pulse width Modulator) circuit arranged by Q19 through Q22 and the horizontal sync signal modulated with the V cycle parabola signal is applied to the base of Q23.

The current flow in the horizontal deflection yoke goes through the L6 horizontal linearity coil and S-shape correction capacitors C24 and C25, and flows through the L7 horizontal pincushion coil. The switch consisting of D13 and Q15 is connected in parallel to L7. The output from Q23 is connected to the gate of Q15. The energy across L7 in the horizontal return trace interval becomes parabolic because Q23 is modulated with the V cycle and switched, the current resonates at the H cycle by C43 and L7 in the horizontal deflection period, is composed with the horizontal deflection yoke current, and corrects the side pincushion. At the same time, the S-shape correction current is modulated with the V cycle in order to correct linearity at the center screeen.

VERTICAL DEFLECTION CIRCUIT

The V cycle sawtooth wave at pin 5 of connector E-2 and the V cycle linearity correction waveform at pin 6 are composed in RV3 and amplified in the differential amplifier consisting of Q5 and Q6. The amplified signal is amplified in the SEPP amplifier arranged with Q7 through Q11 and supplied to the vertical deflection yoke from E-9. The current flowed the vertical deflection yoke is grounded through R31. The voltage at R31 is fed back to the differential amplifier in the first stage.

The H cycle pulse is supplied to the point between D7 and D8 from the P board via C12 and the voltage processed by the voltage doubler rectifier is stored in C13 by D7 and D8 in the later half period of the trace. This voltage is utilized as the power supply for the back pulse appears in the return trace interval of the vertical deflection yoke, so that the return trace interval is shortened.

TOP and BOTTOM PINCUSHION CORRECTION CIRCUIT

D1 through D4 form the balanced modulator circuit. The AFC pulse is integrated in L1 and Cl, and the phase inverted signals are supplied to the balanced modulator consisting of D1 through D4 from the emitter and collector of Q1 as the subcarrier and the V cycle sawtooth wave is inputted as the modulation wave. The gain adjustment is done with RV2 and the top and bottom balance is performed with RV1. The balanced modulated signal is amplified in Q2 and Q3 and supplied to the vertical deflection yoke from the pincushion transformer (T1). The H. cycle resonance circuit is formed by the secondary impedance of L2, C8, and T1 and the H cycle phase of the correction waveform is adjusted.

G1 BLANKING CIRCUIT

The AFC pulse is shaped in L10 and C30 and the H blanking is produced in the comparator IC3. (The blanking width can be adjusted with RV10.) The resultant is the H blanking signal and it is applied to the base of blanking output transistor Q29. The voltage of the blanking signal form pin 3 of E-2 is shifted by Q28 and D22 and the blanking signal is applied to the base of Q29. The output from Q29 is clamped by C35 and D24 and supplied toG1 from pin 4 of the E-6 connector.

G2 (SCREEN) and G4 (FOCUS) CIRCUITS

The back pulse of the H. OUT is rectified in D25 to produce approx. 800 V dc voltage and approx. 580 V is obtained at the emitter of Q30. This voltage is supplied to RV8 and supplied to G4 through the secondary winding of DFT (Dynamic Focus Transformer). The focus is adjusted with RV8. The horizontal sync parabola voltage obtained by integrating the AFC pulse is supplied to the primary of the DFT and added to the focus voltage on the secondary in order to perform the dynamic focus.
The emitter voltage of Q30 goes to the G2 voltage regulator consisting of Q31, Q32, and IC1 (1/2) and the stable voltage is supplied to G2 from the emitter of Q31. The voltage can be controlled with RV9.

ABL CIRCUIT

The high tension current detected in the HV block goes to the buffer circuit at pin 3 of IC2 (1/2) through R89. The output voltage enters the zero cross comparator in IC2 (2/2). When the high tension current increases up to approx. 800 μA, the pin 7 output of IC2 (2/2) becomes approx. 10 V from −10 V and energizes the overload lamp (LED) connected to the E-7 connector. At the same time, the voltage amplified in the inverting amplifier in IC1 (2/2) enters the inverting input of the error amplifier of G2 regulator, pin 3 of IC1 (1/2) and lowers the G2 voltage, so that the high tension current is maintained constant.

3-8. POWER SUPPLY CIRCUIT DESCRIPTION (G BOARD)

+12 V POWER SUPPLY

+12 V supply is used as the reference voltage for −12 V and +5 V power supply. The +12 V with a low impedance and stability is obtained from IC3 as a correct output. IC3 contains a temperature compensated reference voltage error amplifier, a regulator circuit, and a current flow limiter.
The +12 V is adjusted with RV3 whose movable slider is connected to the inverting input (pin 4) of the differential amplifier in IC3. The non-inverting input (pin 5) of the differential amplifier is connected to the reference voltage straight from pin 6 via R38. The amplified output in the differential amplifier is obtained and drives Q9. The output of Q9 drives series regulator transistor Q902.
A potential difference occurs across R42 because of the current flow in R42 and the difference appears at pin 2 (current limit) and pin 3 of IC3 (current sense). The current flow limiter functions when the potential difference between pins 2 and 3 reaches 0.7 V. The C28, R37, and C29 circuit between pins 11 and 13 of IC3 is to prevent the high-frequency oscillation of the +12 V line.
R69 is the adjusting resistor to determine the maximum value of −12 V output.

+5 V POWER SUPPLY

+5 V power is supplied from IC4 as the Vcc power supplies for the ICs used in the circuitry. The reference voltage obtained by resistive division of the +12 V which is adjusted precisely is inputted to the non-inverting input of the differential amplifier circuit (pin 5 of IC4). The inverting input of the differential amplifier circuit supplies the +5 V output voltage to pin 4 via R47. The output from pin 10 drives Q10 and the +5 V output voltage can be obtained from the emitter of Q10.
The current flow limiter detects a potential difference with the current flow in R48 and initiates its operation when the potential difference reaches approx. 1.4 V.
C30 inserted between pins 4 and 13 of IC4 is for the high-frequency oscillation prevention of the +5 V line.

−12 V POWER SUPPLY

The −12 V power circuit is quite alike the +12 V one. Q901 in the −12 V circuit is the regulator transistor of the −12 V power and Q11 is the driver transistor. Q11 is driven by pin 11 of IC5. The +12 V output is used as the reference voltage of IC5. The current flow limiter circuit of the −12 V resembles that of the +12 V power circuit. The limiter functions when the potential difference across the resistor due to the current flow in R60 reaches approx. 0.7 V.

HEATER POWER SUPPLY

The heater power supply for the picture tube is supplied from Q13 driven by Q12. Its reference voltage is obtained from D42.
Q14 is SCR thyristor functioning as the heater protection circuit to open the fuse F2 when an abnormal voltage occurs in the output due to a short circuit of Q13 and other unexpected troubles.

+24 V POWER SUPPLY

+24 V power is used as the −24 V reference voltage and obtained from IC1 as the stable output voltage.
This circuit is quite alike the one of the +12 V power supply. The reference voltage is produced from the incorporated zener voltage and appears from pin 10 as the regulator transistor output. The output is used as the drive current for Q7.
The current limiter circuit also resembles the one in the +12 V power supply circuit and functions when the potential difference across R25 becomes approx. 0.5 V.
The +24 V output voltage can be adjusted with RV2.

+90 V POWER SUPPLY

+90 V supply is used in the video out, the deflection system, and other systems. The circuit is constructed with the reference voltage circuit of D8, the error amplifier circuit of Q4 and Q5, the regulator circuit of Q2 and Q903, the kick circuit of Q3, the protection and indicator circuits of F1 and D6, the excess voltage protection circuit of Q6 and D10 through D13, and other circuits.

The reference voltage of D8 is applied to the non-inverting input (Q4 base) of the differential amplifier circuit in the +90 V regulator circuit. The voltage from the detection section consisting of R14, RV1, R15, and R68 is applied to the inverting input (Q5 base) and Q2 is driven by the output of this differential amplifier. The output from Q2 drives regulator transistor Q903. The regulator circuit operation turns off for an abrupt overload (such as short circuit), but F1 is not blown out. If the regulator circuit becomes not to function due to the short circuit of the regulator transistor or etc., the output voltage turns to be in a range of 100 V to 110 V, so the protection circuit consisting of Q6 and D10 through D13 operates and the fuse F1 is blown.

When the +90 V protection circuit functions or F1 blows due to an abnormal load or other causes, indicator D6 turn on.

EXCESSIVE INPUT PROTECTION CIRCUIT

When the potential difference between C7 and C8 becomes large due to wrong ac primary input voltage, the protection circuit formed with Q1 and D5 functions in a range from 145 V to 160 V and F901 (located outside the board) opens.

DEGAUSS

Degauss coil is for the degaussing the picture tube. It is connected to the ac secondary (for +90 V line) in series with the degauss switch (S2) and the positive thermistor (PTH1). When the degauss switch is turned on, the degauss current flows until PTH1 is heated.

3-9. EHT AND PICTURE TUBE PROTECTOR (P BOARD)

EHT REGULATOR

Q1 and Q2 functions as a monostable multivibrator triggered by the AFC pulse from pin 1 of connector P-7 differentiated in R17 and C13, turning on and off drive transistor Q3 and switching the converter-out transistor, and supplies the sine waveform signal to the primary of FBT through the series and parallel resonance circuit consisting of L2, C9, C10, and FBT. The high-voltage is obtained to produce a dc voltage of five times the peak value of the FBT output voltage in the high voltage block and the voltage is divided in the high-voltage bleeder resistance in the high voltage block. Thus the high voltage and the convergence voltage are supplied to the picture tube. The high-voltage bleeder resistance is connected to the −12 V power supply via RV1 and R18 on the P board and feeds out approx. 0V and 6 V as the bleeder output of the high voltage block. The 0 V output enters the buffer in IC1 (1/2) and the buffer output goes to the error amplifier. The amplifier output enters the emitter follower of Q4 to control the supply voltage to R10 and C2 connected to the Q1 and Q2 monostable multivibrator. Consequently the time constant is changed, the on-division of the converter-out transistor is changed for varying on the current, and the back pulse voltage is changed. So this circuit controls the high voltage.

PICTURE TUBE PROTECTOR

The picture tube protector functions as follows: The approx. +6 V from the high-voltage bleeder is filtered in R26 and C16 and goes to the buffer in IC2 (1/2). The buffer output is connected to the comparator in IC2 (2/2). When the high voltage increases due to some causes and exceeds the reference voltage determined by D13, R23, R24, and R41, the output voltage of IC2 (2/2) is inverted from approx. −10 V to approx. +10 V, turning on Q5. The voltage supplied to the Q1 and Q2 monostable multivibrator from Q4 turns to ground potential, the monostable multivibrator stops, and the high voltage is cut off, protecting the picture tube. Similarly when the high-voltage bleeder output decreases below the compared voltage determined by R32 and R33, the comparator in IC3 (2/2) inverts its output from approx. −10 V to approx. +10 V, and this voltage stops the high voltage output circuit operation.

The vertical-out pulse connected to pin 4 of connector P-7 is peak-rectified by D12 and its voltage is applied to the comparator in IC3 (1/2). When the vertical-out disappears for some reason, the IC3 (1/2) output is inverted to approx. +10 V from approx. −10 V and turns on Q5. So the high voltage is cut off.

3-10. INPUT TERMINAL AND Q BOARD

Input terminal is aparted from the chassis for a minimum return loss and a better hum rejection when it is terminated with 75 Ω.

Each input terminal of the VIDEO A, VIDEO B, EXT SYNC, R, G, and B is connected to the Q board with a shielded line. The shield lines are connected to the bases of the input transistors Q1, Q7, Q13, Q19, Q27, and Q35 and the signal lines to the emitters of these transistors respectively. Consequently the hum components in the base and the emitter of each transistor are in phase, being offset each other.

The signal connected to the VIDEO A terminal is fed, through Q1, Q4, Q5, and Q6 of the OP AMP Q1, to pin 5 of IC4, switching integrated circuit. (The gain of the OP AMP is approx. 1.)

The signal entered the VIDEO B terminal is fed to pin 3 of IC4 in the same manner as in the signal connected to the VIDEO A terminal. When INPUT switch S3 on the JA board is in the A position, pin 6 of IC4 is high (approx. 4 V) and the VIDEO A signal is outputted from pin 1 of IC4 to pin 3 of IC5 and pin 5 of IC6.

When the INPUT switch S3 on the JA board is in the B position, pin 6 of IC4 is low (0 V) and the VIDEO B signal is fed to pin 3 of IC5 and pin 5 of IC6.

An incorporated crosshatch signal is connected to pin 5 of IC5. When the CROSSHATCH switch S4 on the DA board is in the OFF position, pin 6 of IC5 is low and the VIDEO A or B signal is fed to the Q-14 connector (COMP VIDEO OUT) from pin 1 of IC5 but when the CROSSHATCH switch S4 is in the ON position, pin 6 of IC5 is high and the crosshatch signal is fed to the Q-14 connector.

The signal connected to the R terminal is fed to the Q-11 connector (R OUT) via Q19, Q22, Q23, Q24, and Q25 of the OP AMP Q-4. The pedestal section of the signal is clamped to 0 V by a clamper consisting of Q26, IC1-1/2, and IC1-2/2. A portion of the pedestal section is extracted in gate transistor Q26 and integrated in IC1-1/2 to become DC level. It is phase-shifted in IC1-2/2 and controls Q23 of the operation amplifier. A gate pulse is produced in IC8 clamp pulse generator and fed to each gate transistor (Q26, Q34 and Q42).

The signal connected to the G terminal is supplied to the Q-10 connector (G OUT) and pin 3 of IC6 in the same manner as in the R terminal.

Similarly the signal applied to the B terminal is fed to the Q-7 connector (B OUT).
The signal connected to the EXT SYNC terminal is fed to pin 3 of IC7 in the same manner as in the VIDEO A terminal.
When the INPUT switch S3 on the JA board is in the A or B position, the SYNC signal at the A or the B terminal is supplied from pin 1 of IC6 to pin 5 of IC7 and when the INPUT switch is in the RGB position, the SYNC signal at the G terminal is supplied to pin 5 of IC7. When the SYNC switch (S2) on the JA board is in the INT position, the SYNC signal at the A, the B, or the G terminal is fed to the SYNC OUT of the Q-13 connector from pin 1 of IC7. When the SYNC switch is in the EXT position, the SYNC signal at the EXT SYNC terminal is fed.
Therefore when no SYNC component is contained in the G terminal, the EXT SYNC is necessary.

3-11. REMOTE AND VIDEO SWITCHER (T BOARD)

IC1 is a Quad 2-to-1 line data selector and its function table is shown below. Pin 15 of IC1 is connected to ground and A or B appears at output Y depending on the select mode. When the remote terminal, pin 1 of IC1, is +5 V, the A channel appears at output Y and when 0 V, the B channel appears at the output. That is, when pin 1 is set to +5 V, the output of the front control enters IC1 from the connector T-13 and goes to the Q board from the connector T-19, controlling the input signal and when pin 1 is set to 0 V, the voltage from the 10P connector (CNJ902) enters the connector T-20 and goes to IC1 from the connector T-19, controlling the signal, which is the remote control of the signals.

[FUNCTION TABLE]

INPUTS				OUTPUT
STROBE	SELECT	A	B	Y
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

H : high level
L : low level
X : high or low level

3-12. CROSSHATCH GENERATOR (U BOARD)

HORIZONTAL HATCH GENERATOR

The wave-shaped H. sync pulse is applied to pin 12 of IC1 (4/4) via the R25 and C13 filter circuit.
In the CROSSHATCH mode, C.H. switch S4/DA board is on, +5 V is applied to pin 13 of IC1 (4/4) and pin 1 of IC1 (1/4). The H. sync inverted in IC1 (4/4) and IC1 (1/4) goes through Q1, is differentiated in the C1, C2, R3, and RV1 circuit, and outputted from the collector of Q2.
The OSC circuit consisting of Q4 and Q5 having the C5 and L1 resonance circuit stops its oscillating only during the period of the H. pulse passed through Q2 and Q3. The OSC output enters the limter circuit formed by Q4 and Q6, is counted down to 1/2 in IC2, and applied to pin 1 of IC7 (1/2), monostable multivibrator.
Approx. 180 nS duty positive polarity pulse is produced by R46, RV2, C35, and IC7 (1/2) on the basis of the negative going of the pulse applied to pin 1 of IC7 and the produced pulse appears at pin 13 of IC7 (1/2).

VERTICAL HATCH GENERATOR

IC3 and IC2 (2/2) form a 5 bit binary counter. The H. pulse of the pin 3 output of IC1 (1/4) is used as the clock pulse. The 1/32 fH pulse from pin 12 of IC2 (2/2) and the 1/8 fH pulse from pin 8 of IC3 are gated in IC5 (1/4).
The gate output from pin 3 of IC5 (1/4) turns from high to low after 20 H from the counter reset. This output is differentiated in C11, R23, and R24, and applied to pin 13 of IC5 (4/4).
The 1/2 fH pulses from pins 1 and 12 of IC3 are inverted in IC6 (1/4) and applied to pin 9 of IC5 (3/4). This pulse turns to low from high after 1 H from the counter reset. IC5 (4/4) and IC5 (3/4) form a latch circuit. The pulse which turns to high from low 20 H after the counter reset and to low from high 21 H after reset appears at pin 11 of IC5 (4/4).
This pulse is differentiated in C10, R21, and R22, goes to IC3 via IC4 (1/4), is inverted in IC4 (2/4), and applied to IC2 (2/2), which makes IC3 and IC2 (2/2) reset again 20 H after their reset and the resetting is repeated.
The wave-shaped positive V. pulse with 4 H width is inverted in IC4 (4/4), goes through IC4 (1/4), and resets IC3. The pulse is further inverted in IC4 (2/4) and resets IC2 (2/2).
Consequently the 1 H width V. hatch pulse of positive polarity is obtained at pin 11 of IC5 (4/4) at 20 H cycle after the counter is reset by the V. pulse.

NOISE GATE

The wave-shaped horizontal blanking pulse is applied to pin 9 of IC1 (3/4) via R40 and amplifier Q7.
The wave-shaped H. sync pulse of the pin 3 output of IC1 (1/4) is applied to pin 10 of IC1 (3/4) for gating and the H. sync pulse of negative polarity is obtained at pin 8 of IC1 (3/4).
The pulse is rectified in the D7, C15, R28, and R29 circuit and applied to the base of Q9. The dc voltage divided by R30 and R32 is applied to the emitter of Q9. Q9 conducts when the H. sync pulse appears at pin 8 of IC1 (3/4) and turns off when the H. sync pulse does not exist at the pin. The collector output of Q9 is applied to pin 13 of IC6 (4/4) and becomes the low level when Q9 is in the off state. Consequently the H. V. hatch signal mixed in IC6 (2/4) is stopped in IC6 (4/4).

H. and V. BLANKING

The H. sync pulse obtained by waveform shaping of the output from pin 11 of IC1 (4/4) is applied to pin 9 of IC7 (2/2) monostable multivibrator and approx. 8 μS negative polarity pulse produced on the basis of the front edge change of the sync pulse by R43, RV3, L32 and IC7 (2/2) is obtained at pin 12 of IC7 (2/2). Each of the H. and V. hatch signals is blanked only during the pulse period by applying the pin 12 output of IC7 (2/2) to pin 10 of IC4 (3/4) and pin 5 of IC5 (2/4).

The wave-shaped V pulse of the pin 11 output of IC4 (4/4) is applied to pin 3 of IC7 (1/2) for the blanking of the H. hatch signal only during the V. pulse period.

3-13. SYNC PROCESSOR (V BOARD)

SYNC AGC

The composite video signal selected with SIGNAL INPUT switch (S3) on the J board or the composite sync signal selected with EXT SYNC switch (S2) is fed to the chroma filter consisting of R1 and C1 and applied to Q1.

The Q1 emitter output and the dc bias output of the Q2 emitter enter the emitter of amplifier Q3. Q4 connected to the collector of Q3 acts as a variable impedance element by the base bias of Q4. The circuit, therefor, functions as the AGC circuit to control the amplification gain of Q3.

The collector output of Q3 is applied to Q11 via cascade amplifier Q7 and Q8.

Q12, Q13, and Q14 serve as the voltage comparator to compare the base dc voltages of the transistors with the dc level of the output signal from the Q11 emitter.

The base bias for each of Q12 through Q14 is provided by the voltage divider consisting of R20 through R23.

The sync tip of the Q11 output signal conducts Q12, C6 is charged, the charged voltage drives Q9 and Q8, and then the output from Q11 is reproduced to dc.

Q13 conducts at approx. 50% level between the sync tip of the Q11 output signal and the pedestal.

Q14 compares the sync width of the Q11 output signal with the blanking width and sets the voltage level of the pedestal section through the AGC loop.

The collector current of Q14 flows to the integrating circuit formed by C19 and R17, the emitter impedance of Q4 is determined by the voltage in C19, and the amplification gain of Q3 is controlled so that Q14 conducts at the pedestal level of the signal.

1 H SYNC SEPARATION

The Q16 collector output after the sync separation is differentiated in the C27, R36, and R37 circuit and only the front edge pulse of the sync pulse enters pin 1 of IC4 (1/2) via IC2 (6/6) and IC3 (1/4).

The Q16 output is inverted in IC2 (5/6), differentiated in C28, R38, and R39, and enters pin 3 of IC4 (1/2).

The pin 4 output of IC4 (1/2) is made to the negative polarity pulse determined by the negative trigger pulses from pins 1 and 3 of IC4 (1/2) in the circuit arranged with R40, C31, D12, and IC4 (1/2).

The output from pin 4 of IC4 (1/2) is applied to pin 2 of IC5, monostable multivibrator and the positive polarity pulse of approx. 50 μS produced on the basis of the negative-going of the sync pulse appears at pin 3 of IC5. The pulse is inverted in IC2 (1/6), applied to pin 2 of IC3 (1/4), and processed in the AND-gate with the putput pulse from pin 12 of IC2 in order to the equivalent pulse and others contained in the sync signal of Q16. Thus the pin 4 output pulse of IC4 becomes the 1 H cycle pulse.

H DELAY

The output pulse of pin 4 of IC4 is applied to pin 2 of IC6, monostable multivibrator and the positive polarity pulse of approx. 40 μS produced on the basis of the negative-going of the H. sync pulse by R42, RV1, C37, C36, and IC6 appears at pin 3 of IC6.

This pulse is applied to pin 9 of IC4 (2/2) and the output pulse from pin 4 of IC4 (1/2) is applied to pin 10 of IC4 (2/2) via IC3 (2/4).

In the H DELAY mode, pin 5 of IC3 (2/4) is 0 V and the approx. 6 μS negative polarity pulse is produced on the basis of the negative-going of the input pulse to pin 9 by R45, RV2, C4l, and IC4 (2/2) as the output from pin 2 of IC4 (2/2).

In the NORMAL mode, the pulse from pin 9 of IC4 (2/2) is canceled by the pulse from pin 10 and the negative polarity pulse of approx. 5 μS produced on the positive-going of the pin 10 pulse is obtained as the output from pin 12.

31 kHz GENERATOR

The wave-shaped horizontal blanking pulse is applied to pin 2 of IC7 and pin 10 of IC13 (3/4), the pulse of approx. 32 μS duty cycle produced on the basis of the negative-going of the applied pulse by R58, RV3, C50, C51, and IC7, and the produced pulse is outputted from pin 3 of IC7.

This pulse is differentiated in the circuit formed with C52, R59, and R60, applied to pin 9 of IC13 (3/4), processed in the AND-gate with the input pulse to pin 10, and the negative polarity pulse of 31 kHz cycle is obtained as the output from pin 8 of IC13.

VERTICAL SYNC GENERATOR

IC9, IC10, and IC11 are binary counters using the 31 kHz pulse from IC13 (4/4) as the clock pulse.

The sync signal of the Q16 output is integrated in the R46, C46, R71, R47, C47, and IC8 (2/2) circuit and sliced by D10 and D11 to separate only the vertical sync.

The sync goes through buffer amplifier IC8 (1/2), is differentiated by C49 and R53, and enters amplifier Q20.

The negative polarity vertical pusle of the Q20 collector output is inverted in IC2 (3/6), applied to pin 12 of IC12 (3/4) and differentiated by the C67, R55, and R56 circuit, and also applied to pin 14 of IC12 (4/4).

Since pin 10 of IC14 (5/6) remains in low, pin 13 of IC12 (3/4) in high, pin 6 of IC14 in low, and pin 11 of IC12 (3/4) in high at least within 1 field after the vertical pulse is applied, the following input vertical pulse is inverted, appears at pin 9 of IC12 (3/4), is differentiated by C68, R64, and R65, and applied to pin 13 of IC15 (4/4).

When the second vertical pulse turns to low from high before it is inputted, the output from pin 12 of IC14 (6/6) is differentiated by C66, R62, and R63, and the pin 11 output of IC15 (4/4) becomes high. This output serves as the reset pulse for counters IC9, IC10, and IC11.

At this time the pin 11 output of IC15 (4/4) goes to inverter IC14 (1/6) to be the reset pulse for IC15 (1/4) and IC12 (1/4) and each output is fixed to low.

Similarly the vertical pulse to pin 13 of IC15 (4/4) acts as the counter reset pulse.

IN NORMAL MODE

+5 V is applied to pin 1 of IC13 (1/4). The 1/2 fH pulse is applied to pin 2 of IC13 from pin 9 of IC9 and the pin 2 turns to high from low within 1 H after the vertical pulse is inputted. Pin 3 of IC13 (1/4) turns to low from high. The change goes through IC12 (1/4) and IC14 (4/6), is differentiated in C64, R68, and R69, and enters pin 6 of IC12 (2/4). Pin 7 is fixed to high. The 1/8 fH pulse, pin 11 output of counter IC9, is applied to pin 5 of IC12 (2/4) and the pin 7 output of IC12 (2/4) turns to high at 4 H after the vertical pulse is inputted. The level turns to low after 8 H and is fixed. This state is kept until the following vertical pulse is inputted.

IN DELAY MODE

Pin 1 of IC13 (1/4) becomes 0 V with the DELAY switch. The 1/256 fH pulse of the pin 1 and 12 outputs of counter IC11 is inverted in IC13 (2/4). The inverted pulse is applied to pin 2 of IC12 (1/4). The pulse turns to low from high at 128 H after the vertical pulse. The pin 4 output of IC12 (1/4) turns to high from low at 128 H. The output from IC14 (4/6) turns to low from high. The positive polarity of 4 H width appears as the pin 7 output of IC12 (2/4) from 128 H by the same principle with the NORMAL mode.

VERTICAL SYNC NOISE GATE

The 1/512 fH pulse, output from pin 9 of counter IC11 is inverted in IC14 (5/6) and applied to pin 15 of IC12 (4/4).

The pin 13 output of IC12 (4/4) remains in low until 256 H pulse input from the vertical pulse input and turns to high from 256 H pulse input. The change is inverted in IC14 (3/6) and applied to pin 10 of IC12 (3/4). The output of pin 11 of that IC is low until 256 H pulse input and turns to high after 256 H until the following vertical pulse is inputted and the counter is reset.

Consequently even if a noise is mixed into the vertical pulse until 256 H from the vertical pulse input, the noise is canceled in IC12 (3/4) and the noise component does not appear.

VERTICAL FREE RUN GENERATOR

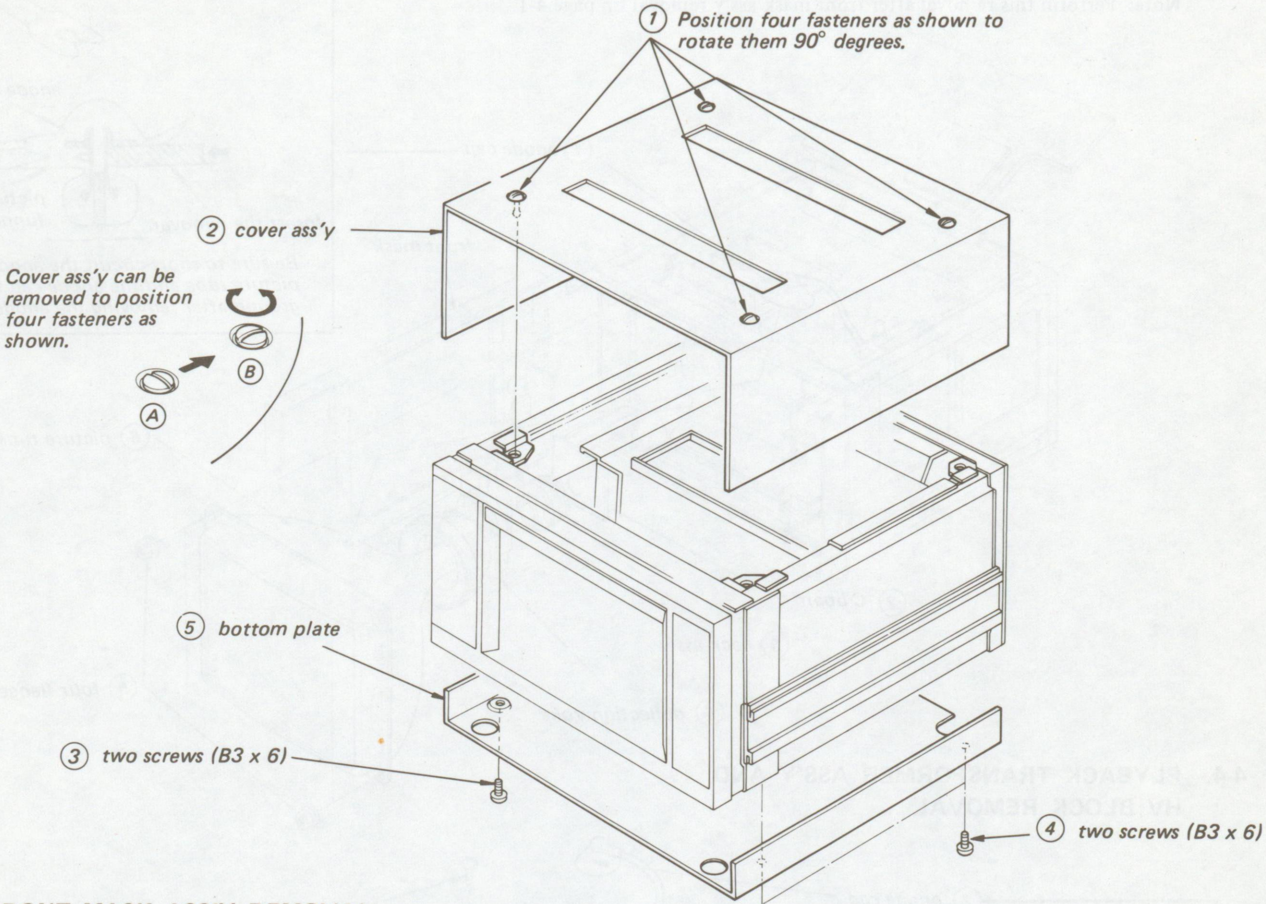
The 1/16 fH pulses of the pins 1 and 12 outputs of IC10 and the 1/512 fH pulse output from pin 9 of IC11 are processed in AND-gate IC15 (3/4) and the pulse which turns from high to low at 264 H from the vertical pulse input is obtained at pin 8 of IC15 (3/4). Note that this is the case that the succeeding vertical pulse is not inputted and the counter is not reset. The pin 6 output of IC15 (2/4) turns to high from low at 264 H, is inverted in IC14 (6/6), differentiated by C66, R62, and R63, and the pulse which turns to high from low at 264 H appears at pin 11 of IC15 (4/4). The counter reset is repeated by this pulse until the vertical pulse is inputted and the 4 H width pulse of 264 H cycle is obtained at pin 7 of IC12 (2/4).

3-14. TALLY CIRCUIT (XA and XB BOARDS)

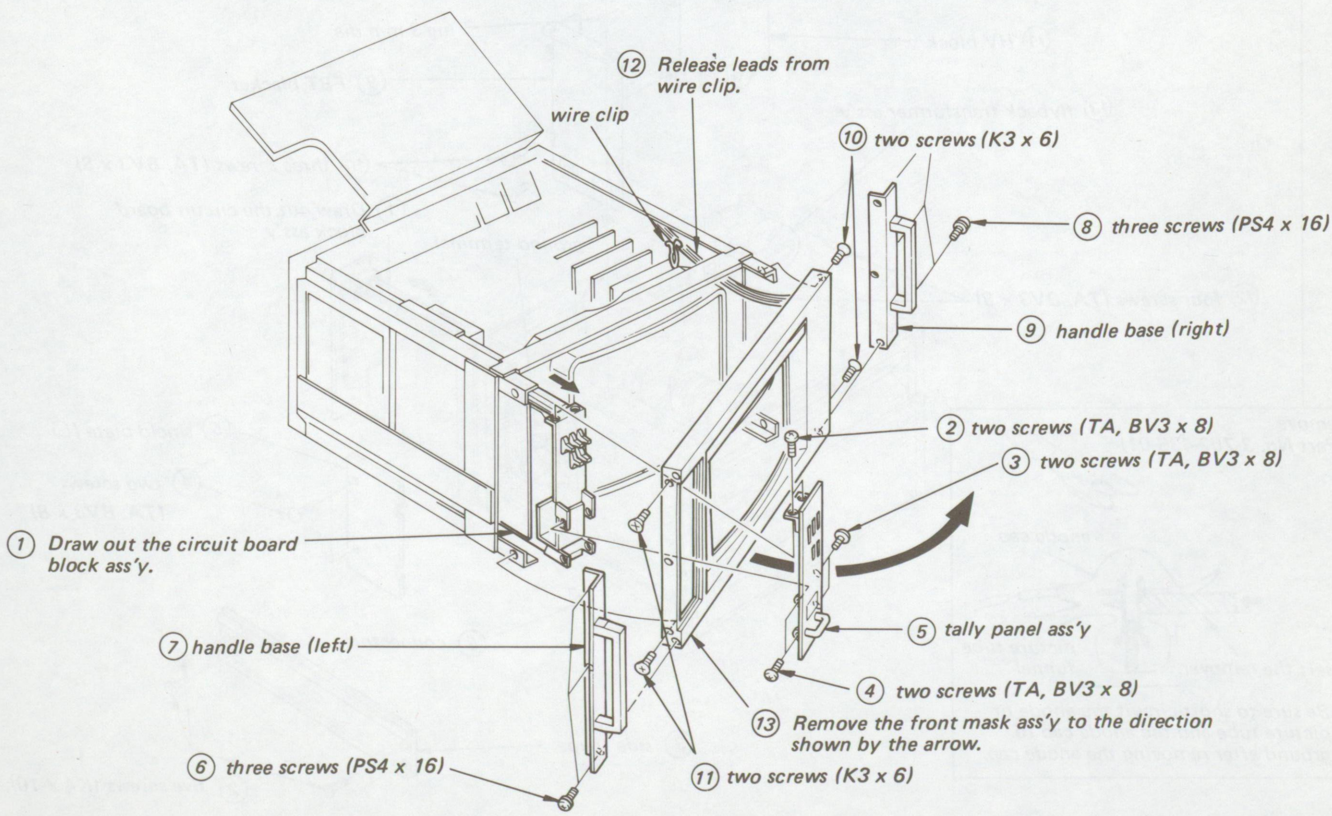
S2 on the XB board is a BCD switch, IC1 is a BCD-to-7 segment decoder, and S2 and IC1 are connected. The binary signal selected with S2 is converted to energize a 7 segment LED (LED1) on the XA board. The energized LED has the identical number to the one selected with S2. When the S1 is OFF position, ON and OFF of LED is controled by the external switch.

SECTION 4
DISASSEMBLY

4-1. CABINET REMOVAL

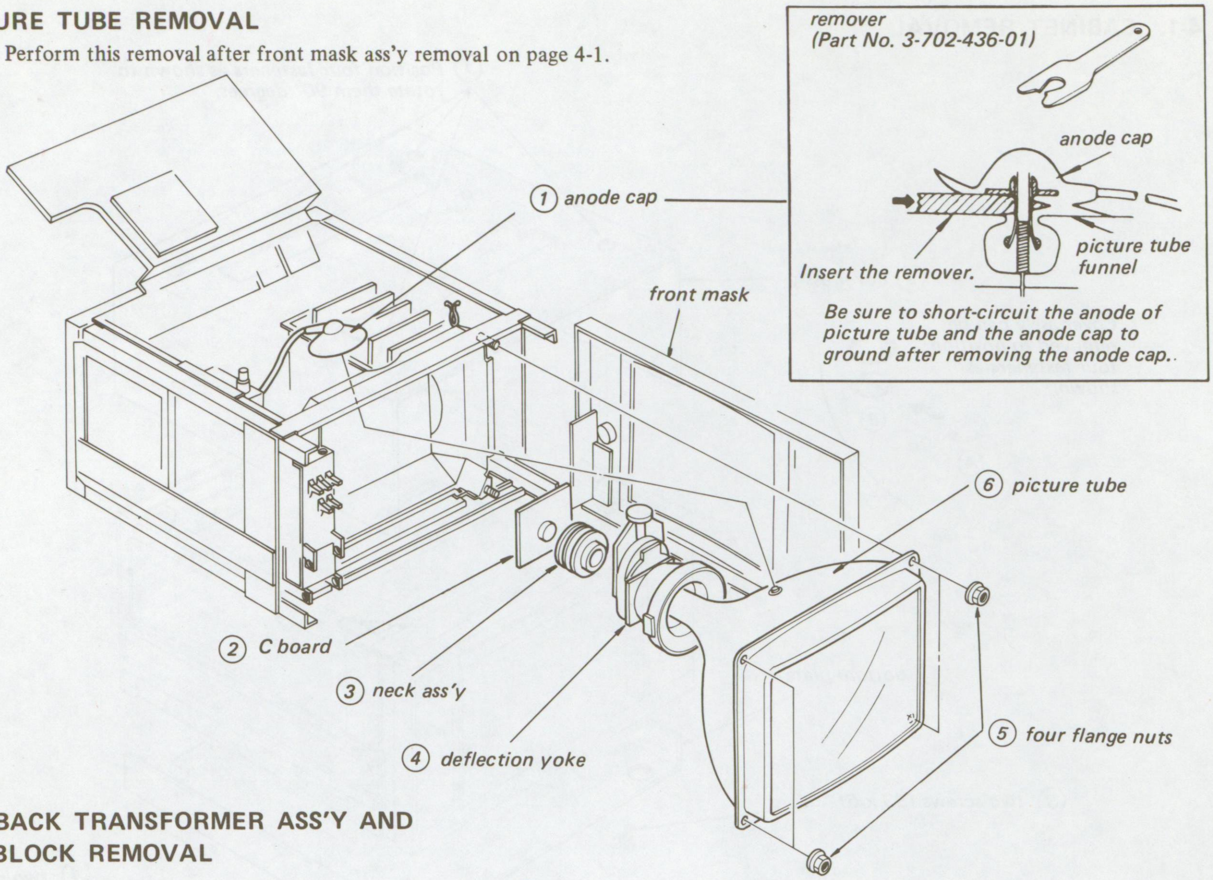


4-2. FRONT MASK ASS'Y REMOVAL

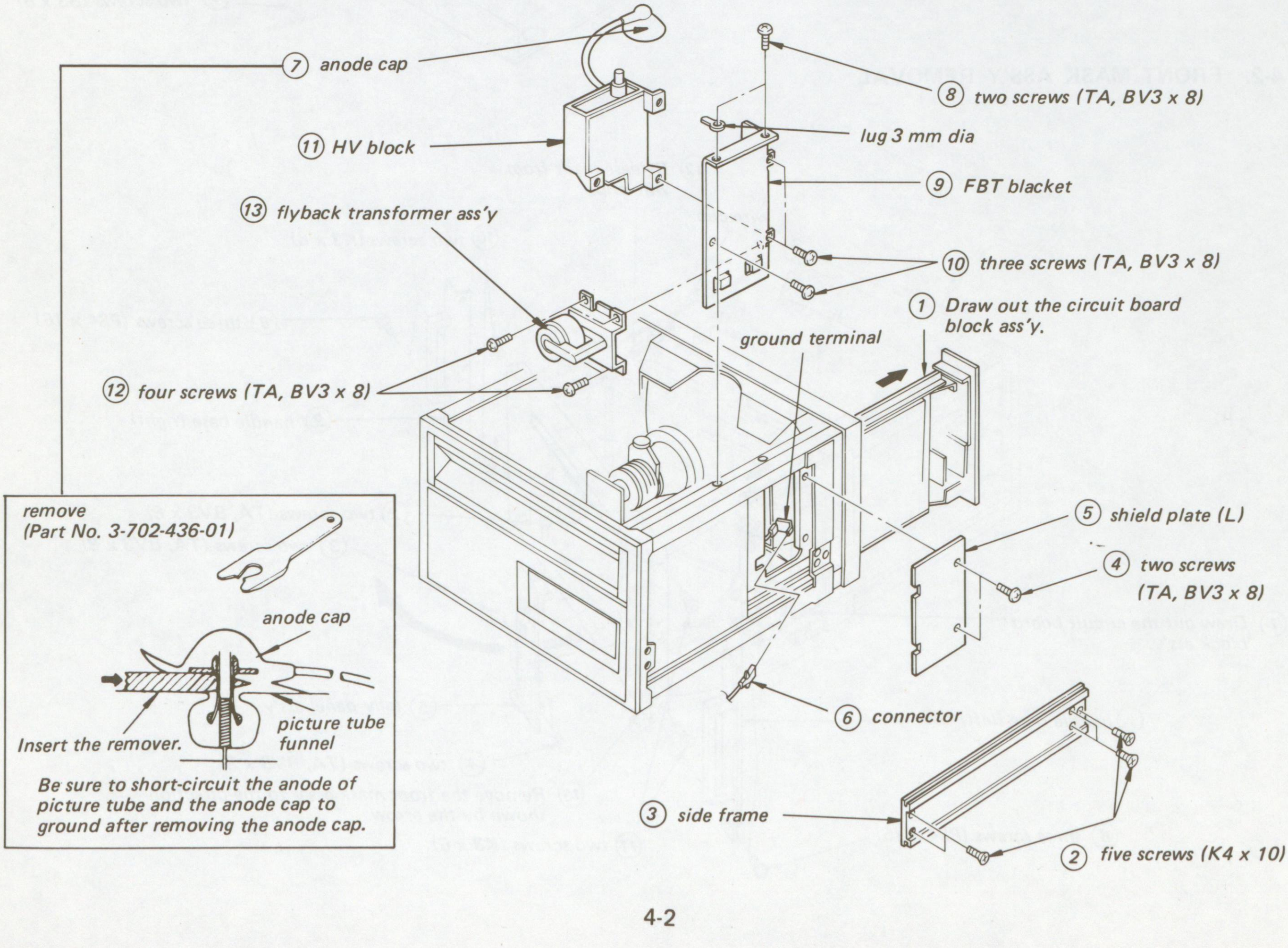


4-3. PICTURE TUBE REMOVAL

Note: Perform this removal after front mask ass'y removal on page 4-1.

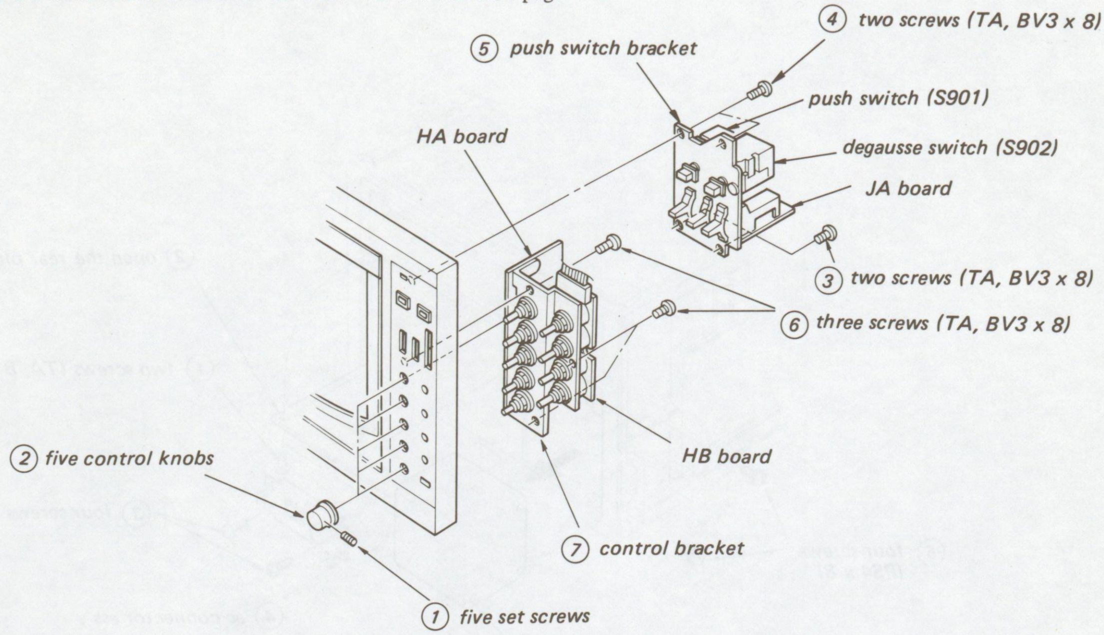


4-4. FLYBACK TRANSFORMER ASS'Y AND HV BLOCK REMOVAL

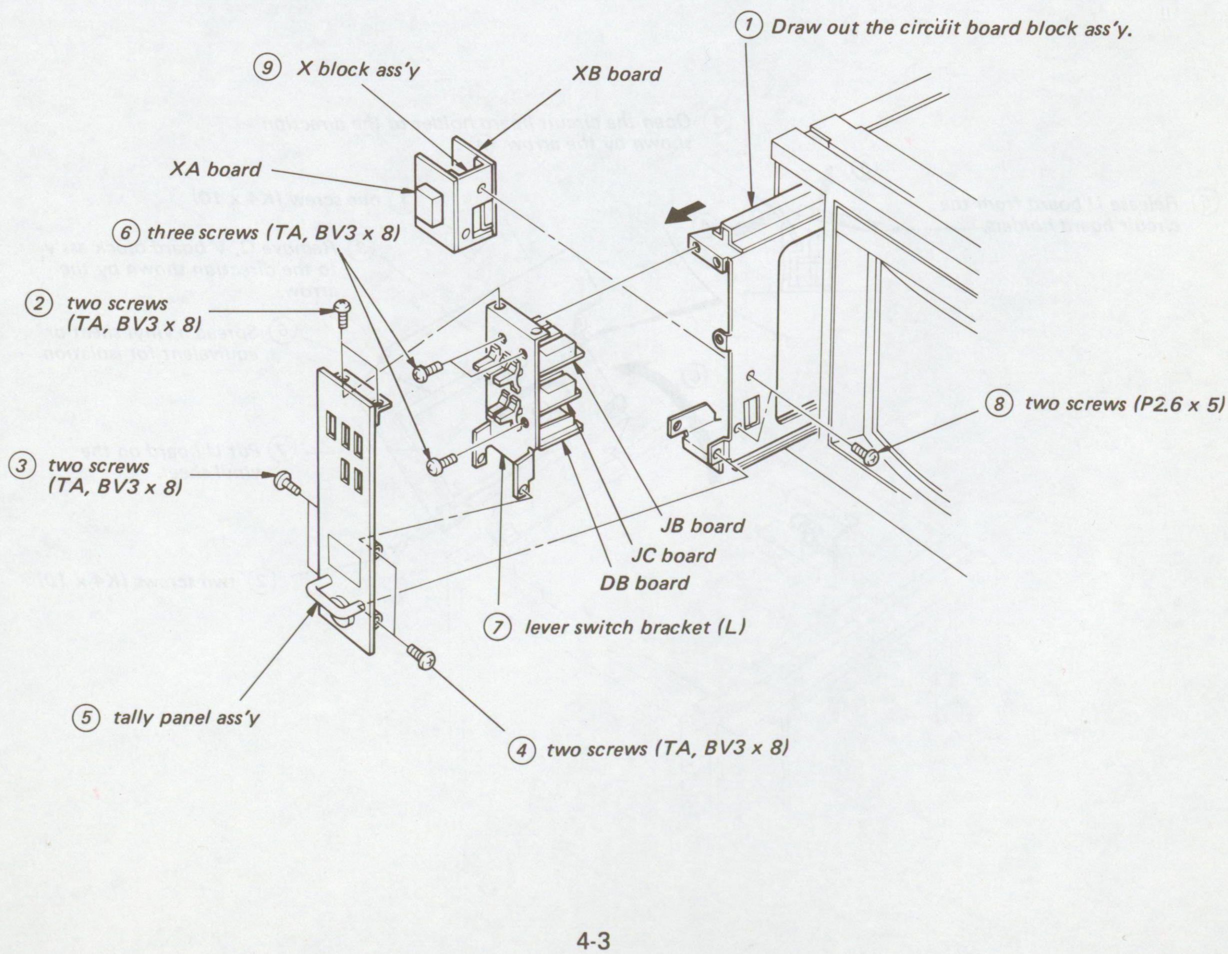


4-5. CONTROL BLOCK (RIGHT) REMOVAL

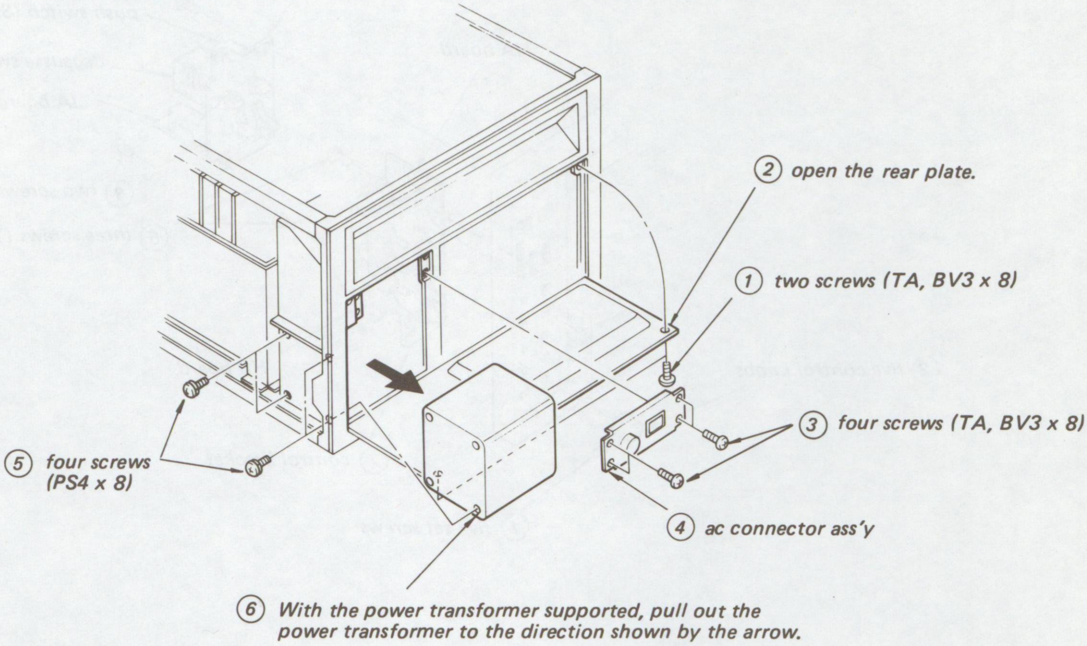
Note: Perform this removal after the front mask removal on page 4-1.



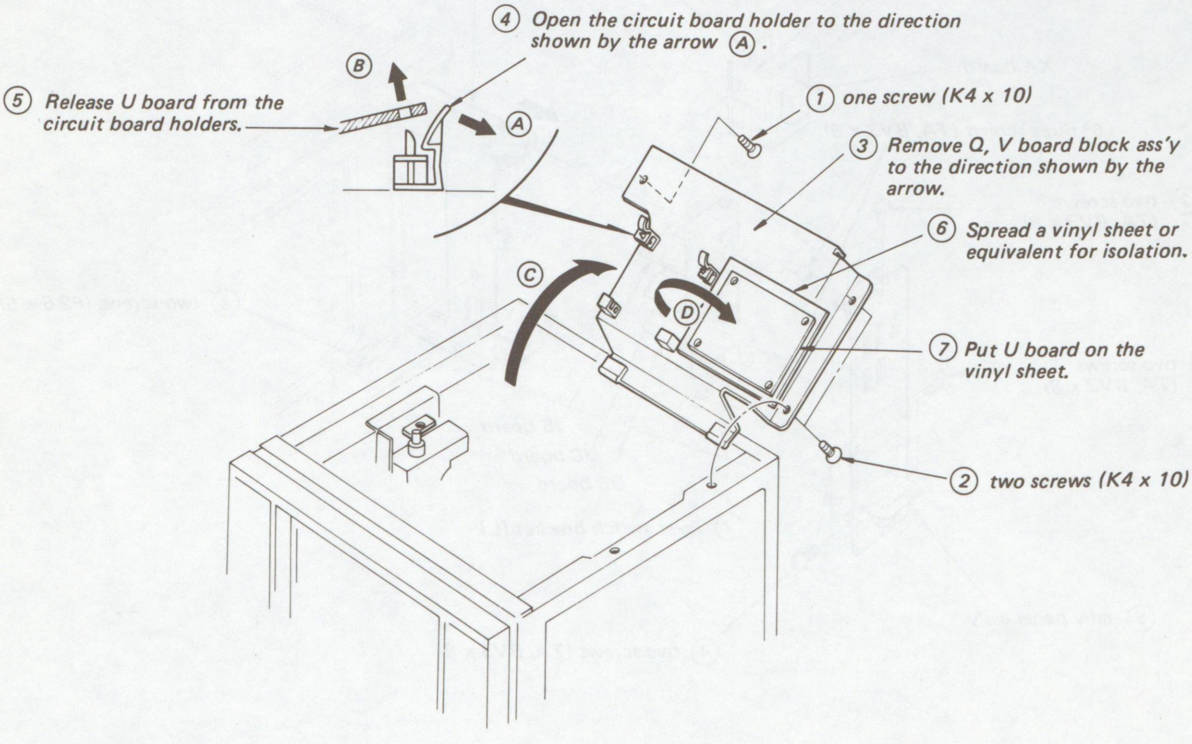
4-6. CONTROL BLOCK (LEFT) REMOVAL



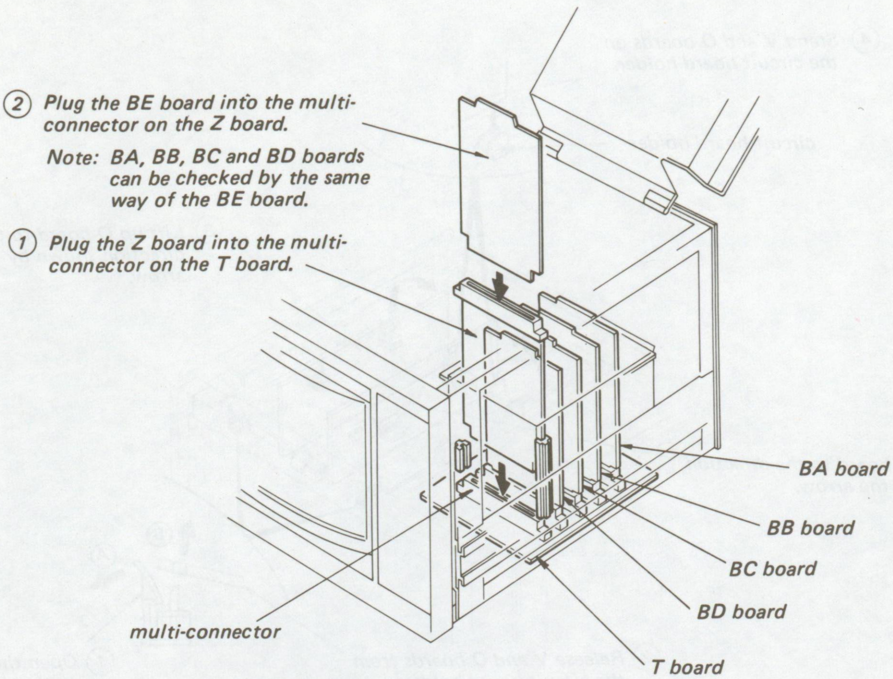
4-7. POWER TRANSFORMER REMOVAL



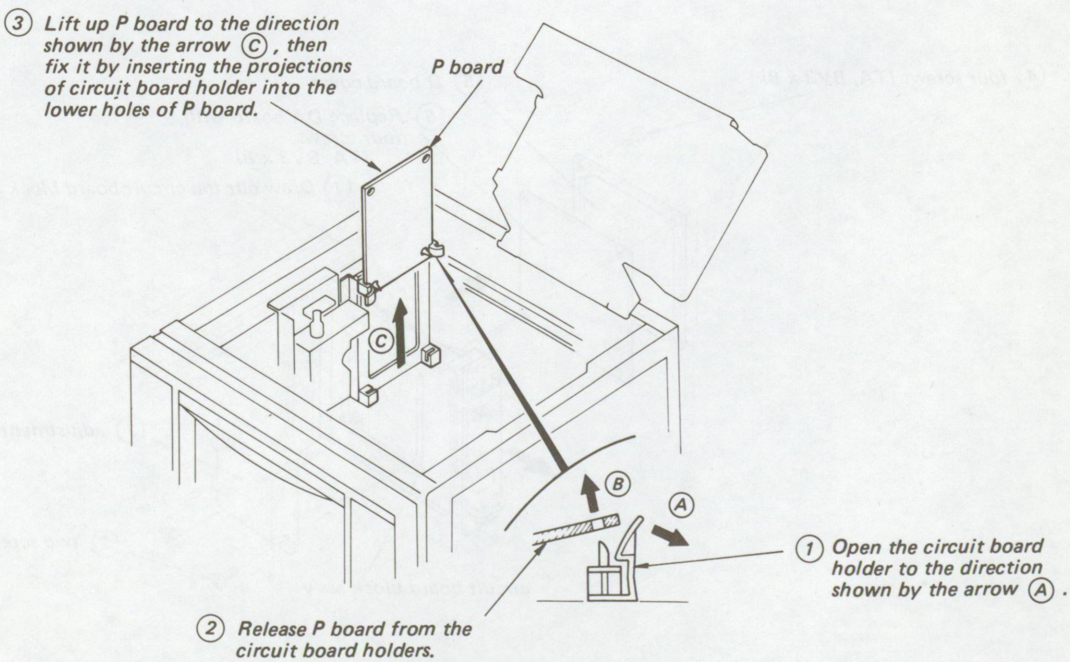
4-8. U BOARD REMOVAL (CHECKING IT UP)



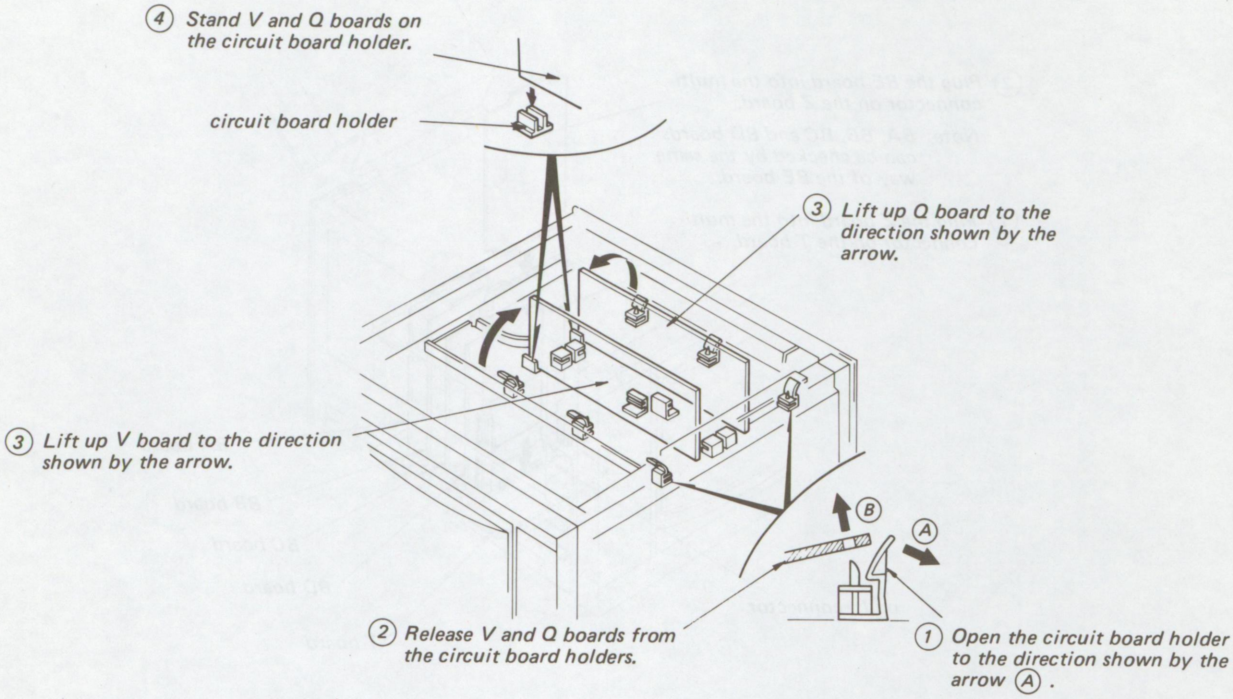
4-9. CHECK OF BA, BB, BC, BD AND BE BOARDS



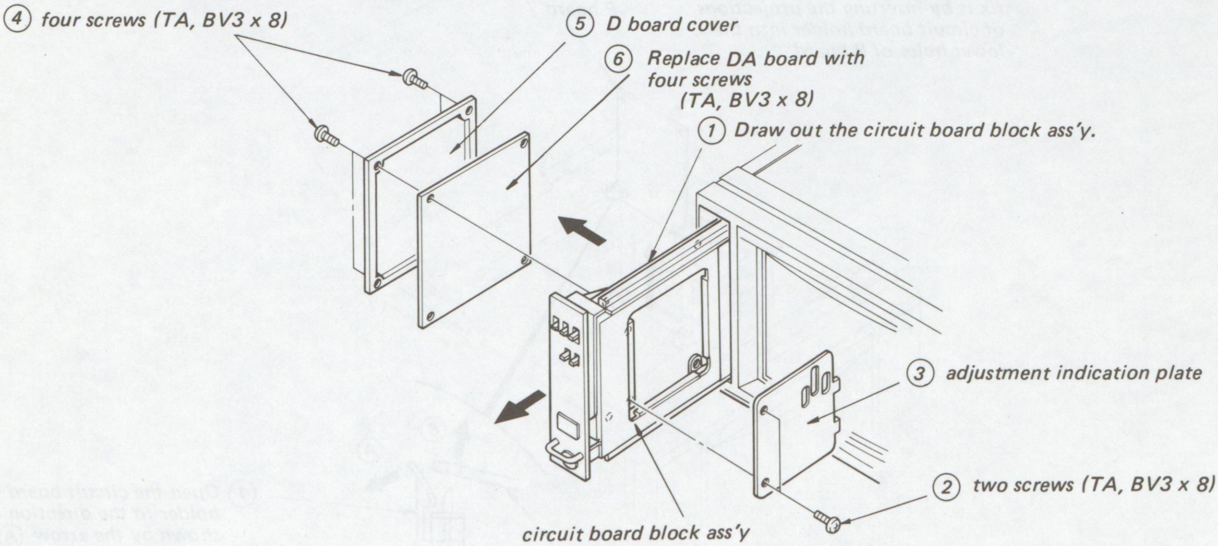
4-10. P BOARD REMOVAL (FOR CHECKING IT UP)



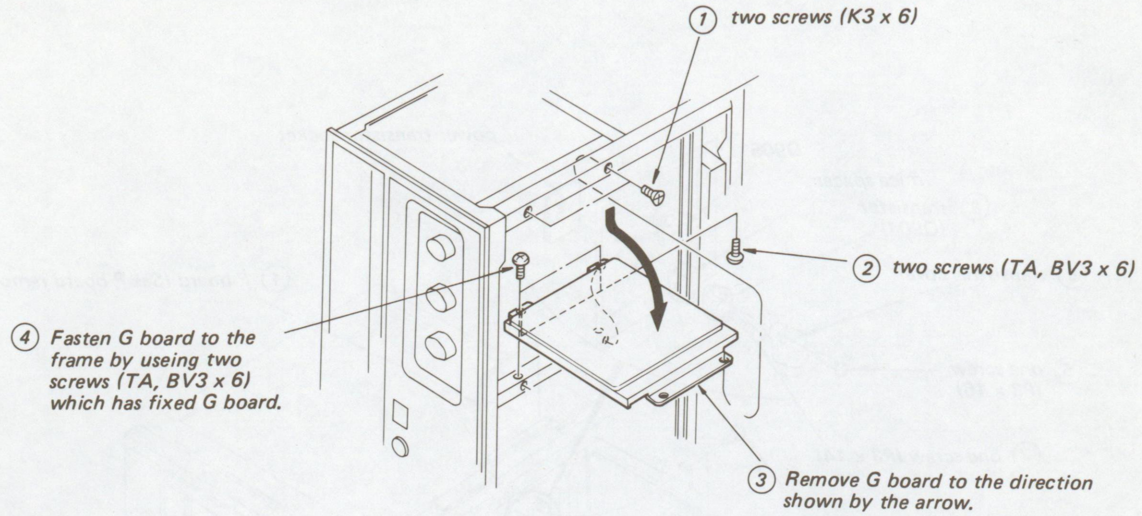
4-11. V AND Q BOARDS REMOVAL (FOR CHECKING THEM UP)



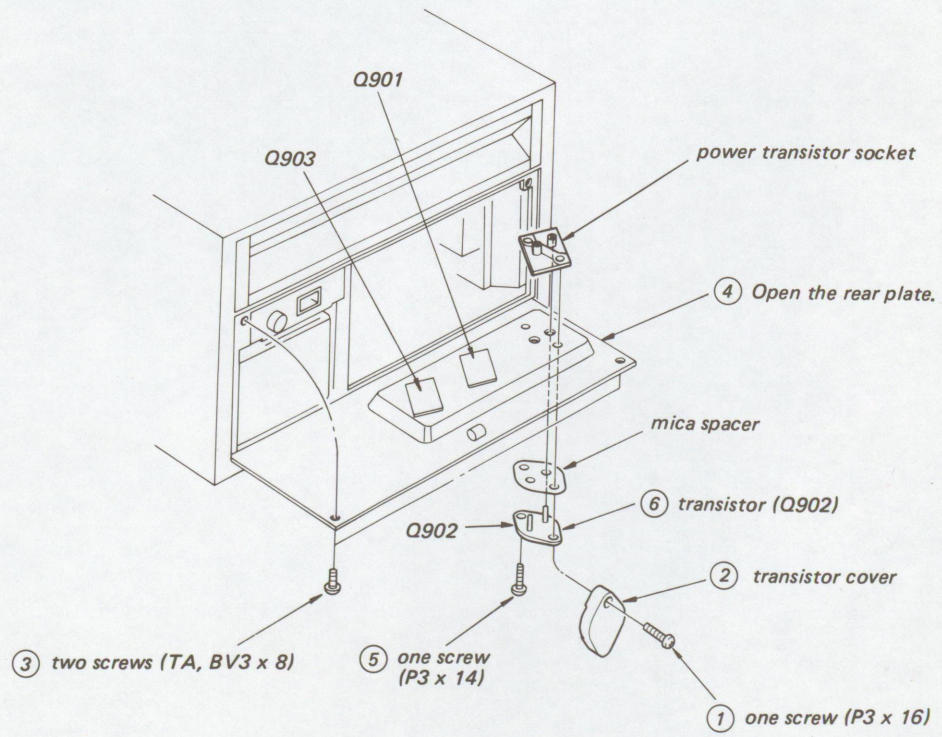
4-12. DA BOARD REMOVAL (FOR CHECKING IT UP)



4-13. G BOARD REMOVAL (FOR CHECKING IT UP)

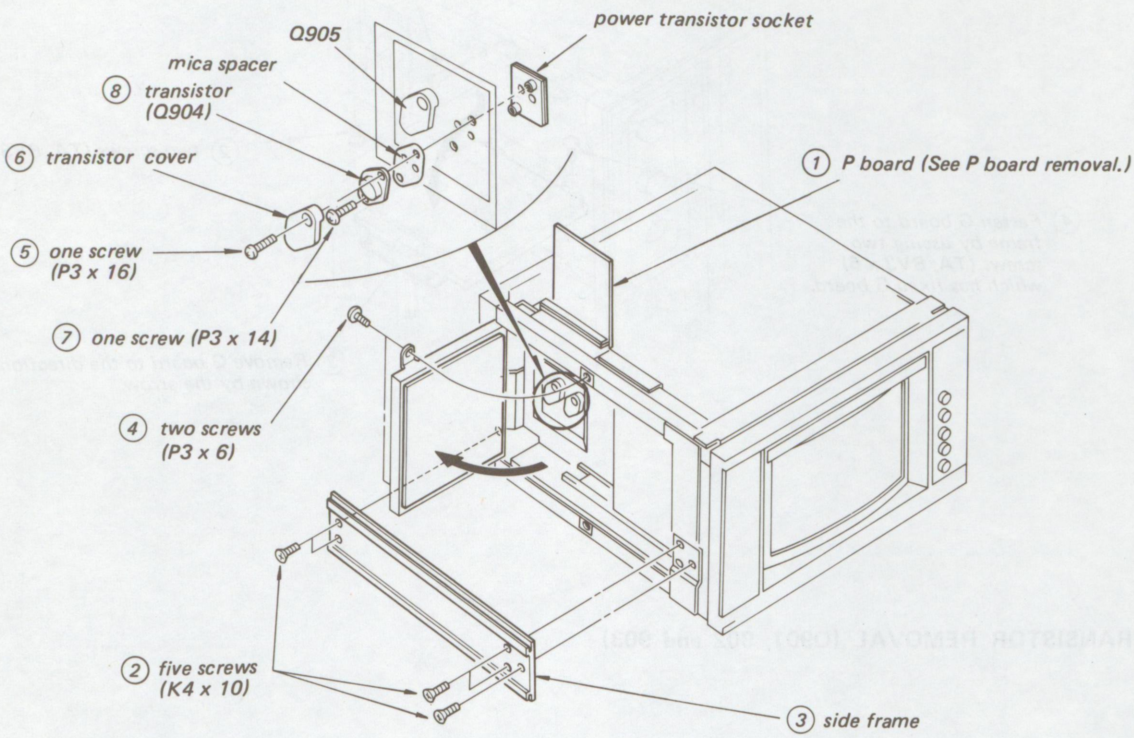


4-14. TRANSISTOR REMOVAL (Q901, 902 and 903)



4-15. TRANSISTOR REMOVAL (Q904, 905)

Note: Perform this removal after P board removal on page 4-5.



SECTION 5
ADJUSTMENTS

5-1. SETUP ADJUSTMENT

The adjustment procedure after the replacement of a picture tube is described below. Usually adjust subcontrols on the subcontrol panel for the convergence and white balance adjustment.

[Jigs, Tools, and Measurement Equipment Required]

1. Signal Generator (TEKTRONIX 1410 series)
2. Color Analyzer
3. Luminance Meter

[Landing Adjustment]

1. Connect the signal generator to the BVM-1201 and feed in the white signal.
2. Turn the BRIGHTNESS and CONTRAST knobs fully clockwise.
3. Place the BVM-1201 so that the screen faces the east (or the west) and degauss allover the screen with the degausser.
4. Keep pushing the DEGAUSS switch more than 5 seconds (until the picture rolling stops) for the degaussing.
5. Set the PURITY adjusting knob to its mechanical center. (See Fig. 5-1.)

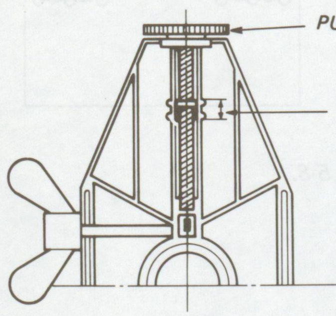


Fig. 5-1.

6. Slide the deflection yoke as fully until it contacts the picture tube funnel closely.
7. Fix the neck assembly at the position as shown in Fig. 5-2.

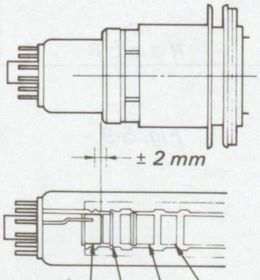


Fig. 5-2.

8. Make the screen green only. (S1 and S3 on the DA board are OFF and S2 is ON.)

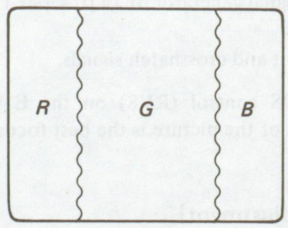


Fig. 5-3.

9. Turn the PURITY adjusting knob so as to center the green band on the screen as shown in Fig. 5-3.
10. Slide back the deflection yoke so that the green raster covers allover the screen.
11. Make the screen red only (S2 and S3 on the DA board are in the OFF position and S2 in the ON position) and repeat Steps 9. and 10. so that the red raster covers allover the screen.
12. Make the screen blue only (S1 and S2 on the DA board are in the OFF position and S3 in the ON position) and repeat the 9. and 10. steps so that the blue raster covers allover the screen.
13. Adjust the tilt of the deflection yoke and tighten the fixing screw.

● **When Color Nonuniformity exists at a screen corner:**

1. Apply the magnet around the deflection yoke where the color nonuniformity exists from the funnel side as shown in Fig. 5-4.

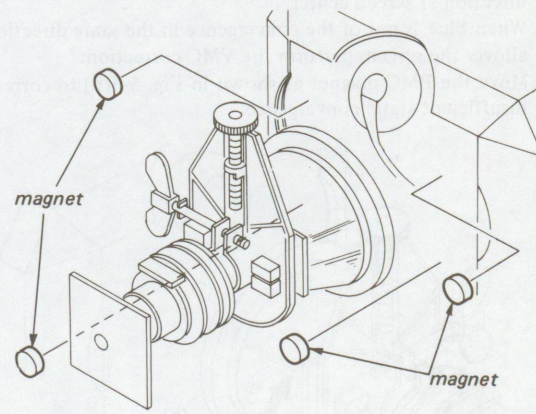


Fig. 5-4.

2. When the magnet is applied, degauss the face of the picture tube with the degausser.

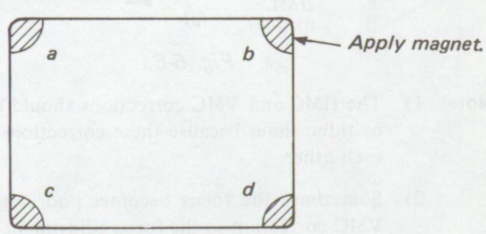


Fig. 5-5.

● **Final Confirmation**

After the adjustment, confirm finally that no color nonuniformity is observed when the BVM-1201 is placed facing in all the directions– north, south, east and west.

[Focus Adjustment]

1. Connect the signal generator of 1410 series) to the BVM-1201.
2. Feed in the dot and crosshatch signals.
3. Adjust FOCUS control (RV8) on the E board so that the center section of the picture is the best focus.

[Convergence Adjustment]

Preparation

1. Complete the signal generator (of 1410 series) connection and feed in the dot and crosshatch signals.
2. Set the CONTRAST AND BRIGHTNESS knobs to the points where the dots and the crosshatch can be observed clearly.
3. Set the SUB. H. STATIC control (RV 10) on the DA board to its mechanical center.

1. Static Convergence

● Horizontal Static Convergence

1) Adjust H. STAT control for the convergence of red and green in the horizontal direction at the screen center.
2) Perform the HMC correction when blue is out of convergence in the same direction on allover the screen.
3) Move the BMC magnet as shown in Fig. 5-6(a) to correct insufficient H. static convergence.

● Vertical Static Convergence

1) Adjust the V. STATIC control (RV 11) on the DA board for the convergence of red and green in the vertical direction at screen center.
2) When blue is out of the convergence in the same direction allover the screen, perform the VMC correction.
3) Move the BMC magnet as shown in Fig. 5-6(b) to correct insufficient static convergence.

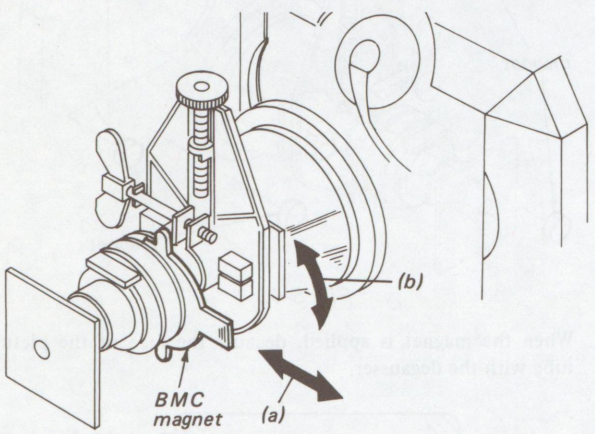


Fig. 5-6.

Note: 1) The HMC and VMC corrections should be repeated two or three times because these corrections are affected by each other.

2) Sometimes the focus becomes poor after the HMC or VMC correction so the focus adjustment should be done again after these corrections.

2. Dynamic Convergence

● Adjust the H. AMP (RV7), H. TILT (RV8), and Y. BOW (RV9) controls on the DA board as follows.

H AMP

Adjust RV7 so that L1 is equal to L2 or L2 to L3.

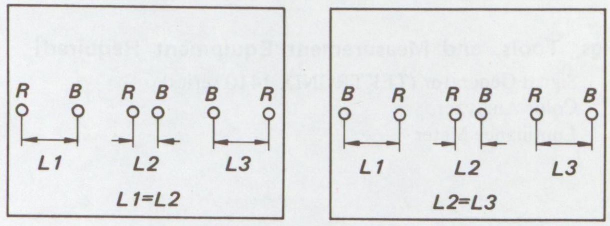


Fig. 5-7.

H TILT

Adjust RV8 for the convergence of red, green and blue.

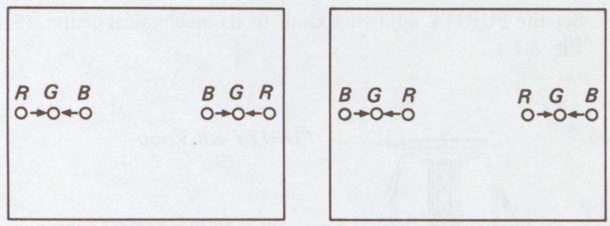


Fig. 5-8.

Y BOW

Adjust RV9 for the convergence of red, green and blue.

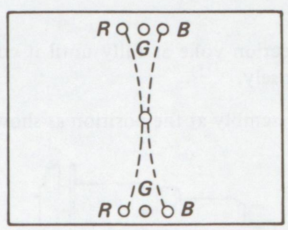


Fig. 5-9.

1) The adjustment should be done by moving the deflection yoke and the yoke should be fixed with the DY spacers after the adjustment. (See Fig. 5-12.)

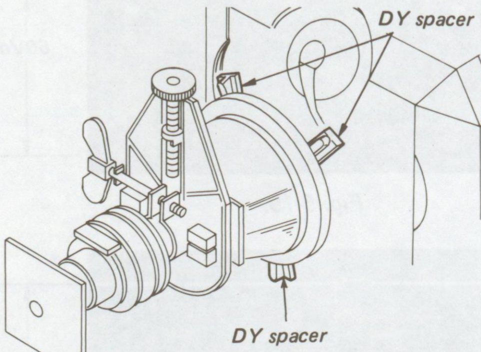


Fig. 5-12.

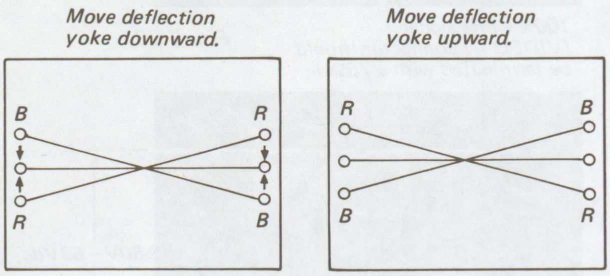
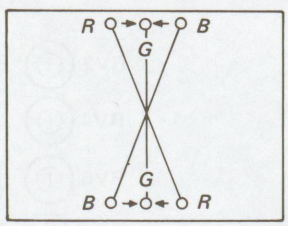


Fig. 5-13.

2) Adjust the Y. TILE control (RV4) on the DB board (Fig.5-24) as shown below.

Y TILT

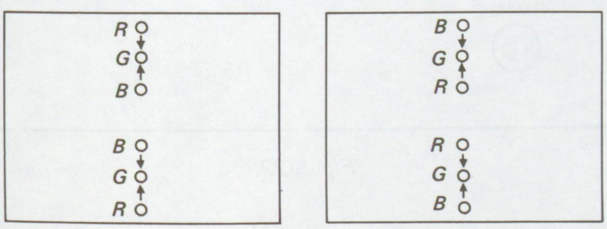


Adjust RV4 so that red, green, and blue converge.

Fig. 5-14.

3) Adjust the V. TILT-GAIN (RV3), the V. TILT-TOP (RV2), and the V. TILT-BOTTOM (RV1) controls on the DB board (Fig.5-24) for the V. tilt gain as shown below.

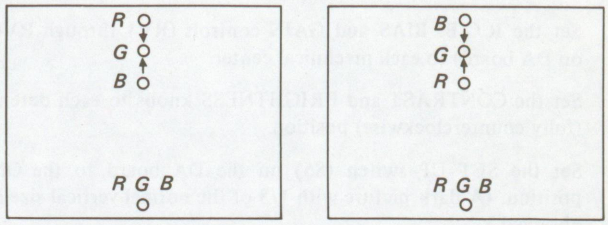
V TILT-GAIN



Adjust RV3 so that red, green, and blue converge.

Fig. 5-15.

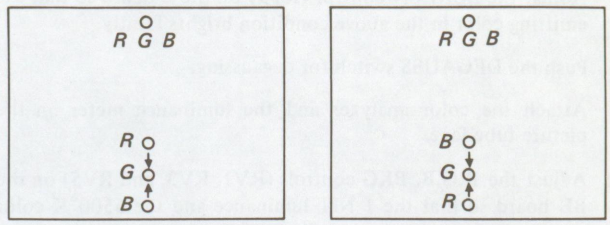
V TILT-TOP



Adjust RV2 so that red, green, and blue on the upper section of the screen converge.

Fig. 5-16.

V TILT-BOTTOM



Adjust RV1 so that red, green, and blue on the lower section of the screen converge.

Fig. 5-17.

- When misconvergence is observed at a corner;

Insert and paste the permalloy assembly between the deflection yoke and funnel corresponding to the corner where the misconvergence is observed as shown in Fig. 5-18.

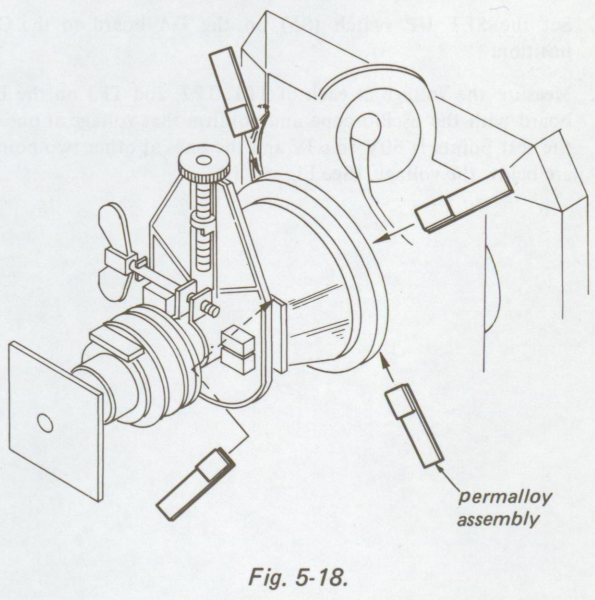


Fig. 5-18.

Note: After the landing adjustment and the convergence adjustment, fix the purity magnet and the BMC magnet with white paint or something like that.

[White Balance Adjustment]

1. Extract the BE board with using the Z board.
2. Set the R.G.B. BIAS and GAIN controls (RV1 through RV6 on DA board) to each mechnical center.
3. Set the CONTRAST and BRIGHTNESS knobs to each detent (fully counterclockwise) position.
4. Set the SET UP switch (S5) on the DA board to the ON position. (A dark picture with 1/3 of the normal vertical size is observed.)
5. Connect an oscilloscope to TP1 on the BE board and adjust RV1 for 60V dc. (See Fig. 5-19.)
6. Remove the scope and connect it to TP2 and adjust RV3 for 60V dc. (See Fig. 5-19.)
7. Adjust the SCREEN control (RV9) on the E board so that the emitting color in the above condition brights faintly.
8. Push the DEGAUSS switch for degaussing.
9. Attach the color analyzer and the luminance meter on the picture tube face.
10. Adjust the R.G.B. BKG controls (RV1, RV3, and RV5) on the BE board so that the 1 NIT luminance and the 6500°K color temperature are obtained at the SETUP mode.
11. Set off the SETUP switch.
12. Connect the signal generator to the BVM-1201 and feed in a white pattern (100% white). (See Fig. 5-20.)
13. Adjust the R.G.B. DRIVE controls (RV2, RV4, and RV6) on the BE board so that the 103 NIT luminance and the 6500°K color temperature are obtained at the HIGH LIGHT mode.
14. Confirm that the white balance is good at the SETUP mode.
15. Set the SET UP switch (S5) on the DA board to the ON position.
16. Measure the voltage at each of TP1, TP2, and TP3 on the BE board with the oscilloscope and confirm that voltage at one of the test points is 60V to 63V and the ones at other two points are below the voltage. (See Fig. 5-21.)

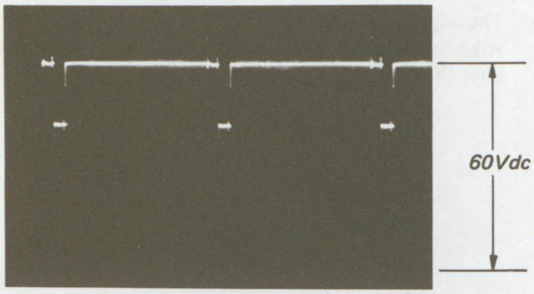
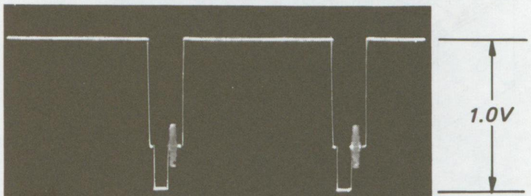


Fig. 5-19.



100% white signal (VIDEO IN connector should be terminated with a 75Ω.)

Fig. 5-20.

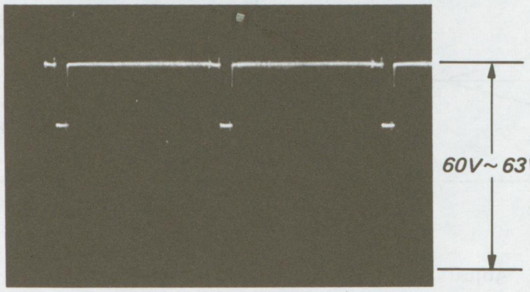


Fig. 5-21.

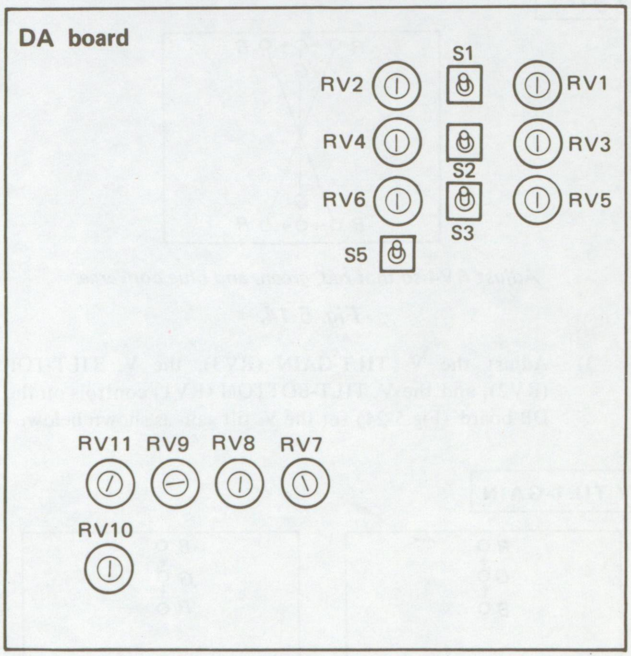


Fig. 5-22.

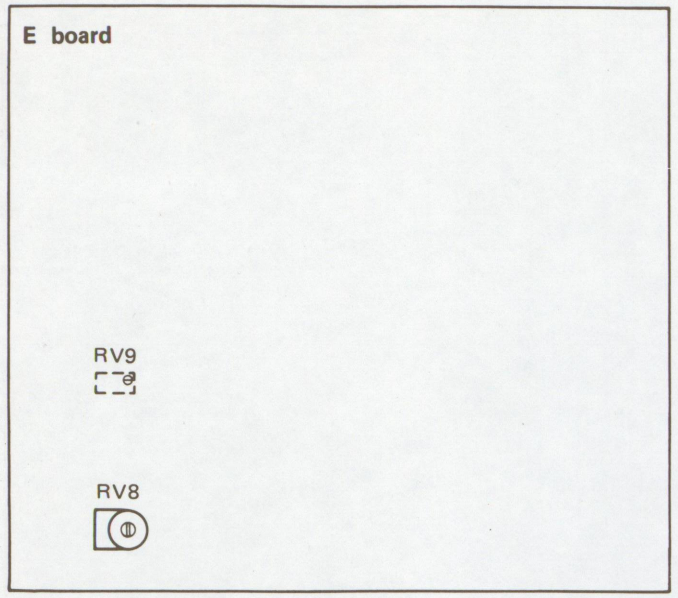


Fig. 5-23.

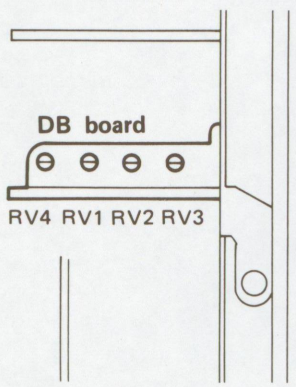


Fig. 5-24.

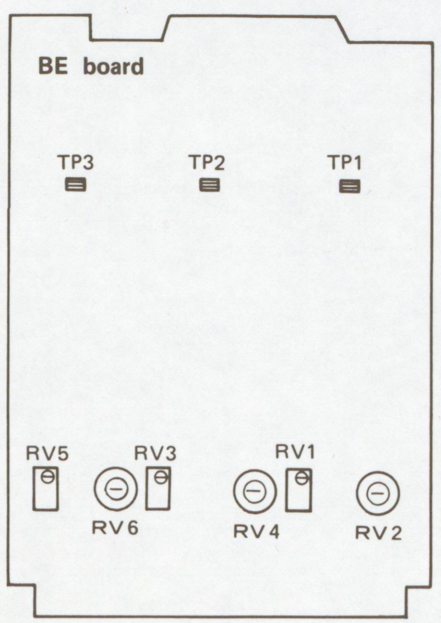


Fig. 5-25.

5-2. G BOARD ADJUSTMENT

Note: TEST EQUIPMENT REQUIRED

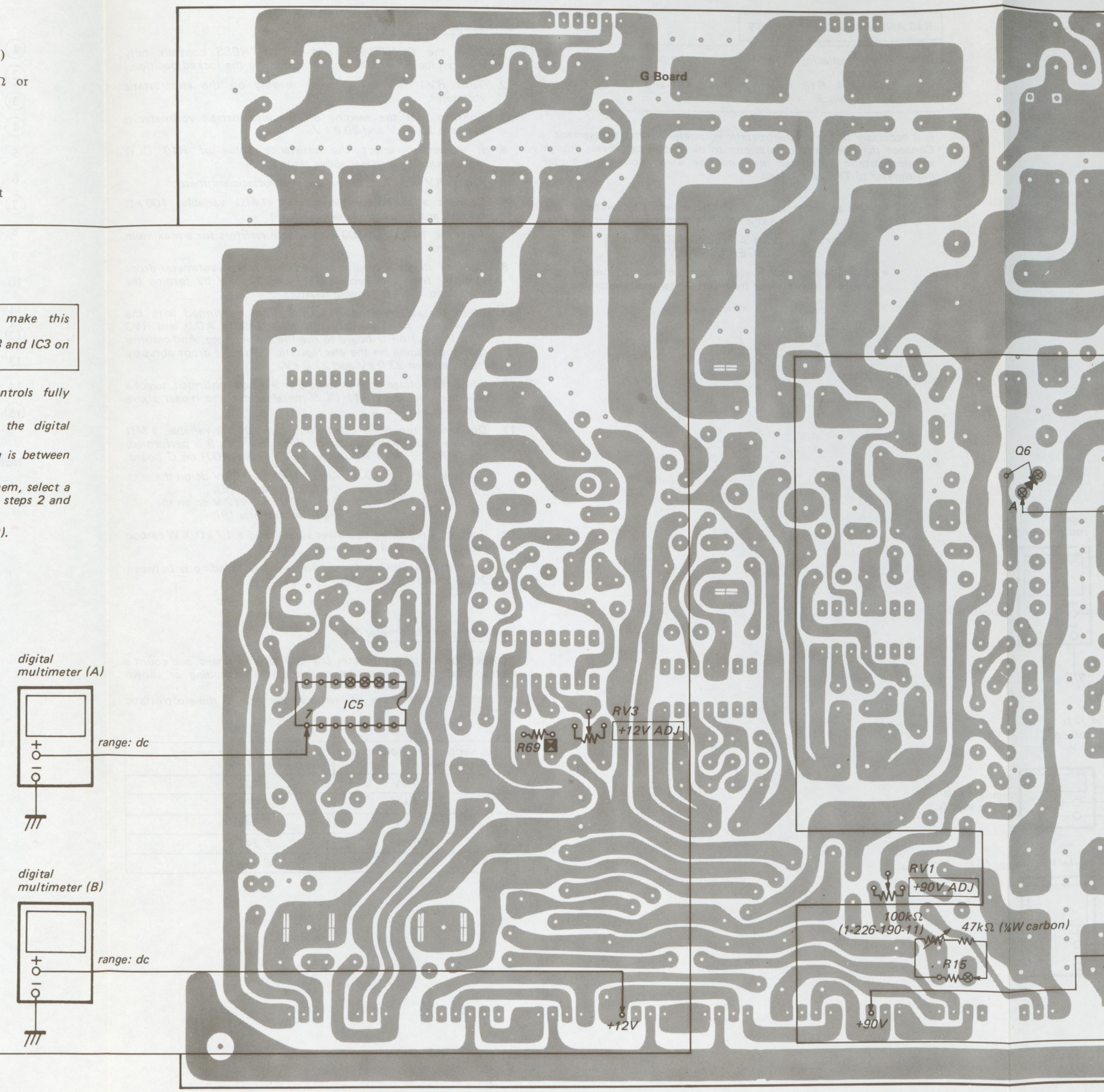
1. Digital multimeter (input impedance: 1 MΩ or more)
2. Electrostatic voltmeter (input impedance 2×10^{9} Ω or more)

   example: ESH-27X or ESH-23X of the SINGER COMPANY
3. Variable auto-transeformer
4. Video tuner SONY Model "VTU-200" or equivalent

R69 ADJUSTMENT

Note: When replacing the following components, make this adjustment. R43, R44, R53, R54, R58, R59, R69, R70, RV3 and IC3 on G board

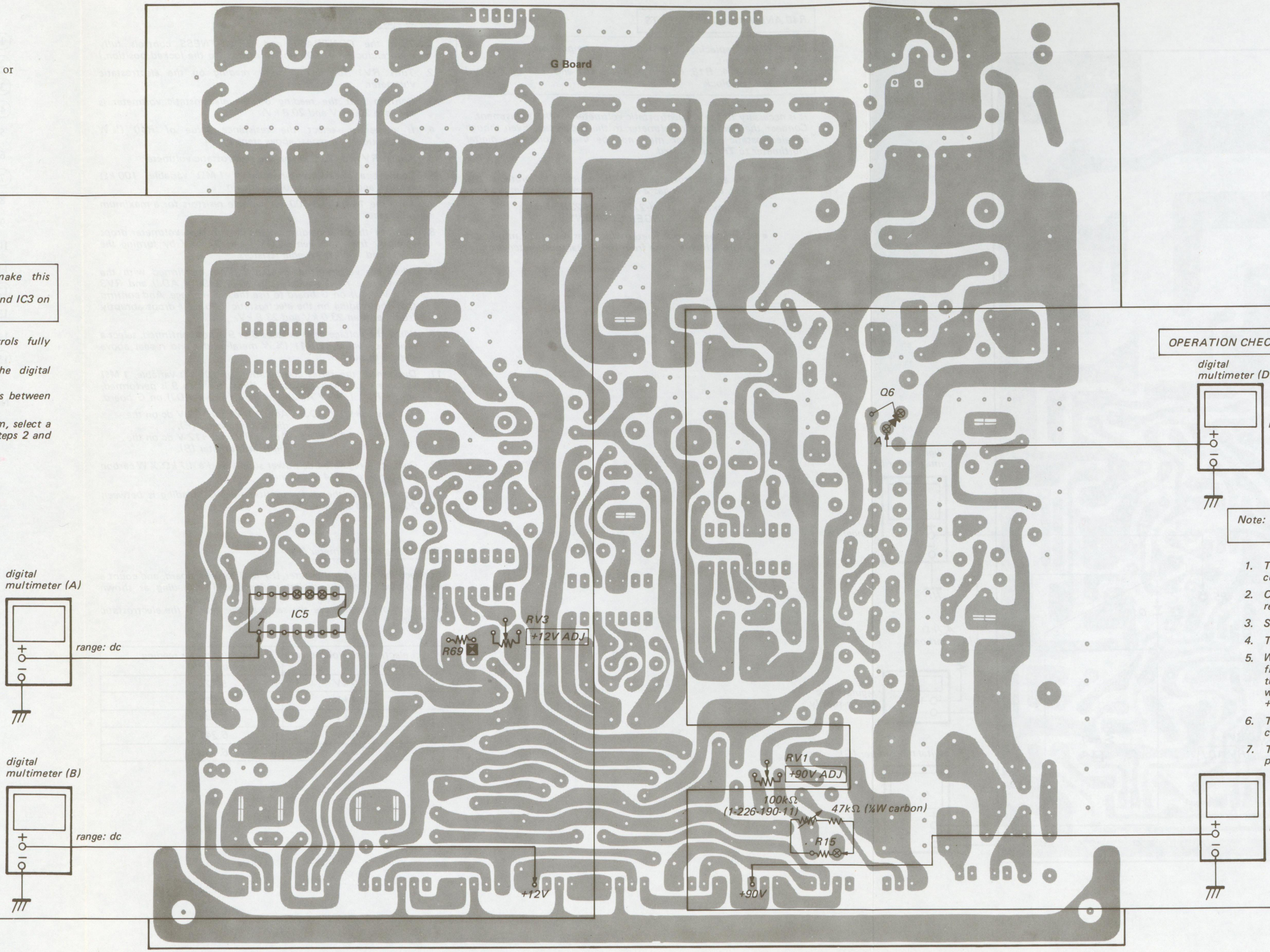
1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise and lock them.*
2. *Turn the RV3 for a maximum reading on the digital multimeter (A).*
3. *Confirm that the digital multimeter (A) reading is between −12.7 V to −12.3 V.*
4. *If the digital multimeter (A) reading is out of them, select a value of R69 (¼ W metal-oxide) and repeat above steps 2 and 3.*
5. *Adjust RV3 for +12 V on the digital multimeter (B).*



ce: 1 MΩ or more)
pedance 2×10^9 Ω or
23X of
PANY
00" or equivalent

ng components, make this
9, R69, R70, RV3 and IC3 on

RIGHTNESS controls fully
um reading on the digital
neter (A) reading is between
ading is out of them, select a
and repeat above steps 2 and
ital multimeter (B).

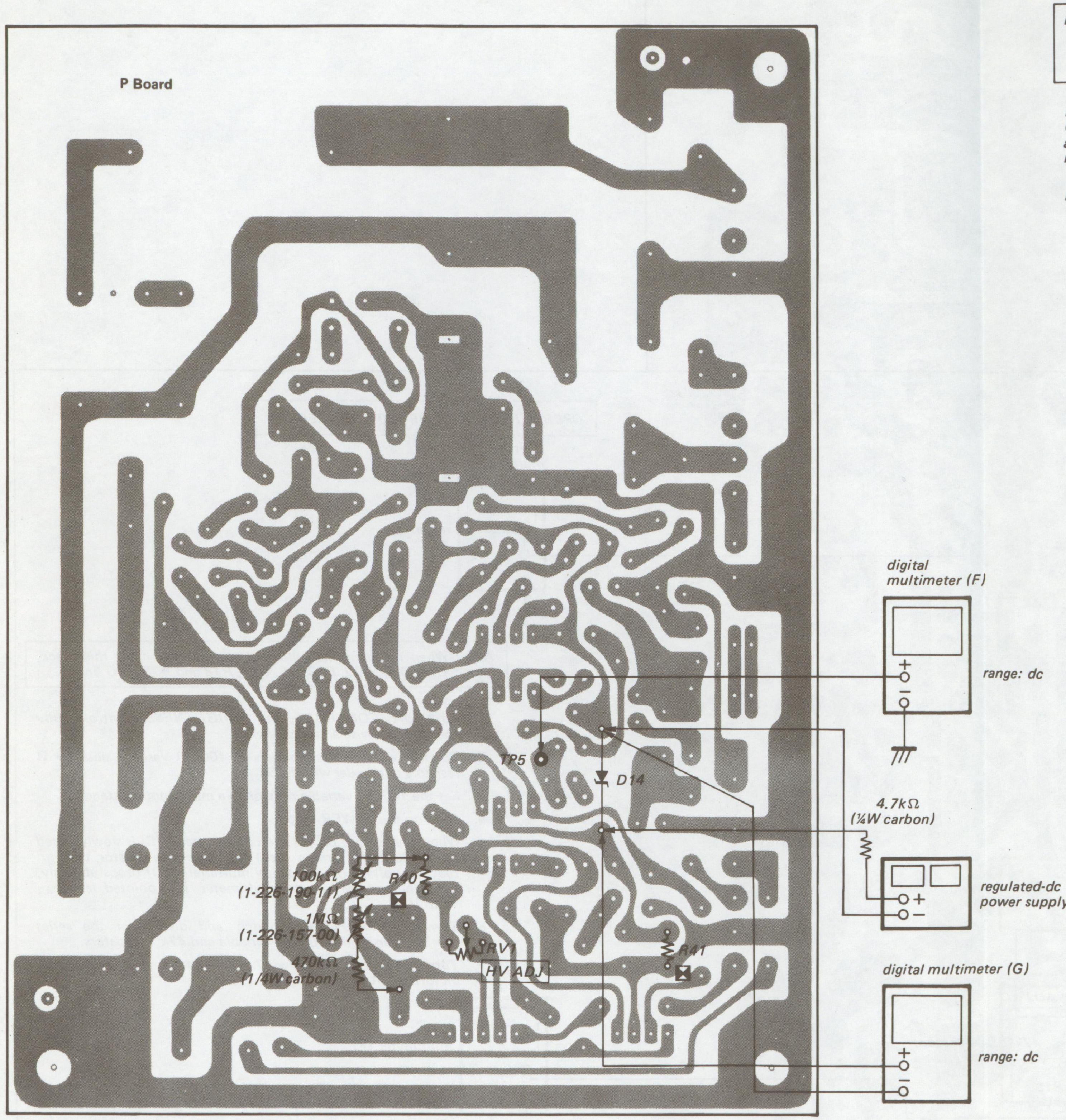


OPERATION CHECK OF +90 V PROTECTOR

Note: When replacing the following components, make this check. D10, D11, D12, D13, Q6, R17, R18 and R73 on G board

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise and lock them.*
2. *Connect a series combination of 100k Ω variable and 47k Ω resistors in parallel with R15.*
3. *Set the 100k Ω variable resistor to a maximum resistance.*
4. *Turn on the POWER switch.*
5. *When the voltage on the digital multimeter (E) is slowly raised from +90 V by turning the 100k Ω variable resistor, confirm that the voltage on the digital multimeter (D) drops abruptly, with the voltage on the multimeter (E) pointed less than +108 V.*
6. *Turn off the POWER switch and disconnect the series combination of the 100k Ω variable and 47k Ω resistors.*
7. *Turn on the POWER switch and confirm that the normal picture is obtained.*

5-3. P BOARD ADJUSTMENT



R40 AND R41 ADJUSTMENTS

Note: When replacing the following components, make this adjustment.
D13, D14, R18, R23, R24, R40, R41 and RV1 on P board and HV block

It is necessary to use an electrostatic voltmeter for this adjustment. Connect the electrostatic voltmeter to the anode cap. Even though an electrostatic voltmeter may not be used, connect a digital multimeter to TP5 on P board.

Note:
- *Use an electrostatic voltmeter which is calibrated to the best, and which has 2×10^9 Ω or more input impedance.*
  (example: ESH-27X or ESH-23X of the SINGER COMPANY)
- *Use a digital multimeter which has 4 digit or more, and count a high-voltage from the digital multimeter reading.*

Case of electrostatic voltmeter

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise. (Do not turn them to the locked position.)*
2. *Turn RV1 for a maximum reading on the electrostatic voltmeter.*
3. *Confirm that the reading on the electrostatic voltmeter is between 20.4 kV and 20.8 kV.*
4. *If necessary, select the resistance value of R40 (¼ W metal-oxide) and repeat above steps 2 to 4.*
5. *Adjust RV1 for 20.0 kV on the electrostatic voltmeter.*
6. *Connect a series combination of 1 MΩ variable, 100 kΩ variable and 470 kΩ resitors as shown.*
7. *Turn the 1 MΩ and 100 kΩ variable resistors for a maximum resistance.*
8. *Confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV by turning the 1 MΩ and 100 kΩ variable resistors.*
9. *When the voltage-drop in step 8 is not confirmed with the high-voltage rised enough, turn RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board to rise the high-voltage. And confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV.*
10. *When the voltage-drop in steps 8 or 9 is not confirmed, select a resistance value of R41 (¼ W metal-oxide) and repeat above steps 6 through 9.*
11. *Disconnect the series combination of 100 kΩ variable, 1 MΩ variable and 470 kΩ resistors. When the step 9 is performed, adjust RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board.*

    RV1 (+90 V ADJ): Adjust RV1 for +90 V dc on the digital multimeter (E).
    RV3 (+12 V ADJ): Adjust RV3 for +12 V dc on the digital multimeter (B).
12. *Connect a regulated dc power supply and a 4.7 kΩ ¼ W carbon resistor across D14 as shown.*
13. *Confirm that the digital multimeter (G) reading is between 20.96 V and 22.30 V.*

Case of Digital Multimeter (F)

Connect the digital multimeter (F) to TP5 on P board, and count a high-voltage from the digital multimeter (F) reading as shown below.
Adjusting procedures are the same as the case of the electrostatic voltmeter.

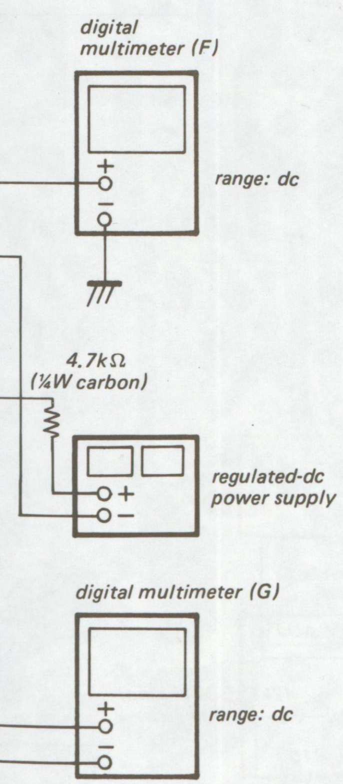
electrostatic voltmeter reading	digital multimeter reading (voltage on TP5)
20.0 kV	5.427 V
20.4 kV	5.536 V
20.8 kV	5.644 V
23.0 kV	6.241 V
23.8 kV	6.458 V

5-4. CIRCUIT AD

JIG,TOOL, AND

1 Signal Generator
2 Oscilloscope (TE
3 Differential Ampl
4 Return Loss Brid
5 Video Sweep Ger
6 Oscilloscope (wit
7 Tracking Scorp (
8 Video Frequency
9 High Gain Video
10 75 ohms termina
11 Isolation Transfo
12 Vector Monitor (
13 Digital Voltmete
14 Attenuator
15 Linearity Gauge
0305-00)

Note: The measureme
should be the c



R40 AND R41 ADJUSTMENTS

Note: When replacing the following components, make this adjustment.
D13, D14, R18, R23, R24, R40, R41 and RV1 on P board and HV block

It is necessary to use an electrostatic voltmeter for this adjustment. Connect the electrostatic voltmeter to the anode cap. Even though an electrostatic voltmeter may not be used, connect a digital multimeter to TP5 on P board.

Note:
- *Use an electrostatic voltmeter which is calibrated to the best, and which has 2 x 10^9 Ω or more input impedance.*
  (example: ESH-27X or ESH-23X of the SINGER COMPANY)
- *Use a digital multimeter which has 4 digit or more, and count a high-voltage from the digital multimeter reading.*

Case of electrostatic voltmeter

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise. (Do not turn them to the locked position.)*
2. *Turn RV1 for a maximum reading on the electrostatic voltmeter.*
3. *Confirm that the reading on the electrostatic voltmeter is between 20.4 kV and 20.8 kV.*
4. *If necessary, select the resistance value of R40 (¼ W metal-oxide) and repeat above steps 2 to 4.*
5. *Adjust RV1 for 20.0 kV on the electrostatic voltmeter.*
6. *Connect a series combination of 1 MΩ variable, 100 kΩ variable and 470 kΩ resitors as shown.*
7. *Turn the 1 MΩ and 100 kΩ variable resistors for a maximum resistance.*
8. *Confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV by turning the 1 MΩ and 100 kΩ variable resistors.*
9. *When the voltage-drop in step 8 is not confirmed with the high-voltage rised enough, turn RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board to rise the high-voltage. And confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV.*
10. *When the voltage-drop in steps 8 or 9 is not confirmed, select a resistance value of R41 (¼ W metal-oxide) and repeat above steps 6 through 9.*
11. *Disconnect the series combination of 100 kΩ variable, 1 MΩ variable and 470 kΩ resistors. When the step 9 is performed, adjust RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board.*
    RV1 (+90 V ADJ): Adjust RV1 for +90 V dc on the digital multimeter (E).
    RV3 (+12 V ADJ): Adjust RV3 for +12 V dc on the digital multimeter (B).
12. *Connect a regulated dc power supply and a 4.7 kΩ ¼ W carbon resistor across D14 as shown.*
13. *Confirm that the digital multimeter (G) reading is between 20.96 V and 22.30 V.*

Case of Digital Multimeter (F)

Connect the digital multimeter (F) to TP5 on P board, and count a high-voltage from the digital multimeter (F) reading as shown below.
Adjusting procedures are the same as the case of the electrostatic voltmeter.

electrostatic voltmeter reading	digital multimeter reading (voltage on TP5)
20.0 kV	5.427 V
20.4 kV	5.536 V
20.8 kV	5.644 V
23.0 kV	6.241 V
23.8 kV	6.458 V

5-4. CIRCUIT ADJUSTMENTS

JIG, TOOL, AND MEASUREMENT EQUIPMENT REQUIRED

1. Signal Generator (TEKTRONIX 1410 series)
2. Oscilloscope (TEKTRONIX 7000 series)
3. Differential Amplifier Unit (TEKTRONIX 7A13)
4. Return Loss Bridge (TEKTRONIX 015-0149-00)

(Items 2–4: Used for INPUT terminal return loss adjustment.)

5. Video Sweep Generator
6. Oscilloscope (with Delay mode)
7. Tracking Scorp (TAKEDA RIKEN TR4120)
8. Video Frequency Delay Distortion Measurement Equipment
9. High Gain Video Amplifier
10. 75 ohms terminator
11. Isolation Transformer
12. Vector Monitor (TEKTRONIX TYP602 Option Type 05)
13. Digital Voltmeter
14. Attenuator
15. Linearity Gauge (TEKTRONIX Linearity Graticule PN 331-0305-00)

Note: The measurement equipment whose item number is encircled should be the one specified above.

1. **INPUT Terminal Return-loss Adjustment**

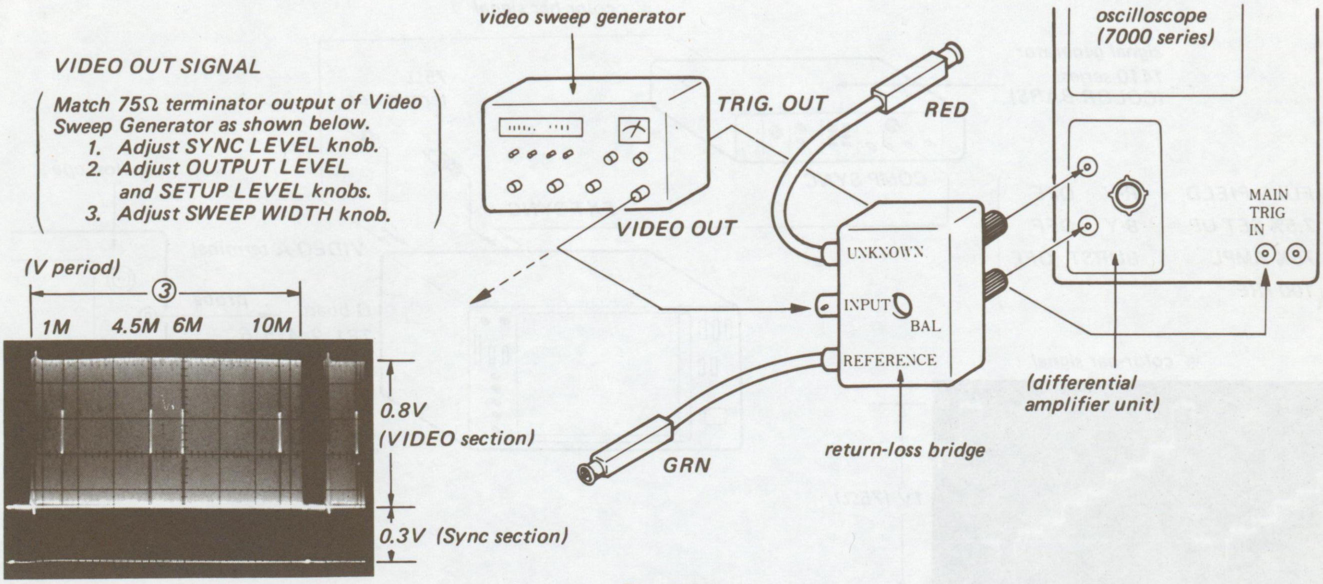
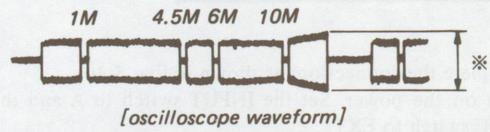


Fig. 5-26.

1. Complete the connections as shown in Fig. 5-26.
2. Set the +INPUT of the 7A13 unit to DC and connect the −INPUT to GND. (Check that the video section of the sweep signal is 0.4Vp-p.)
3. Set the −INPUT of the 7A13 unit to DC and set the VOLT/DIV knob to the 1mV range. Adjust the BAL on the return-loss bridge for minimum output waveform on the oscilloscope. (See Fig. 5-27.)
4. Disconnect the 75 ohm terminator on the UNKNOWN (red) side of the return-loss bridge. Connect the terminator to the VIDEO A terminal of the BVM-1201 with the cable. (See Fig. 5-28.)
5. Turn on the power of the BVM-1201. Set the INPUT switch to the A position and the SYNC switch to the INT position.
6. Adjust CV1 on the Q board for minimum output waveform (but it should be below 2mVp-p in a range of 0 to 10MHz).
7. Turn off the power of the BVM-1201 and confirm the output waveform is below 2mVp-p in a range of 0 to 10 MHz.
8. Perform each adjustment of the VIDEO B (CV3), EXT SYNC (CV5), R (CV6), G (CV8), and B (CV10) terminals in the similar procedure.

   INPUT switch setting should be as below.
   For VIDEO B terminal adjustment . . . . B
   For R, G, or B terminal adjustment . . . . RGB



Adjust BAL of return-loss bridge so that marked with ※ becomes as flat as possible in a range of 0 to 10MHz and minimum (below 1mVp-p).

Fig. 5-27.

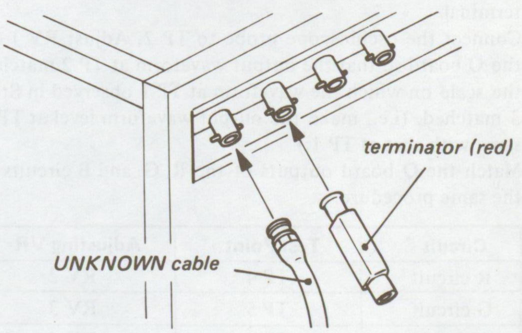


Fig. 5-28.

Q board

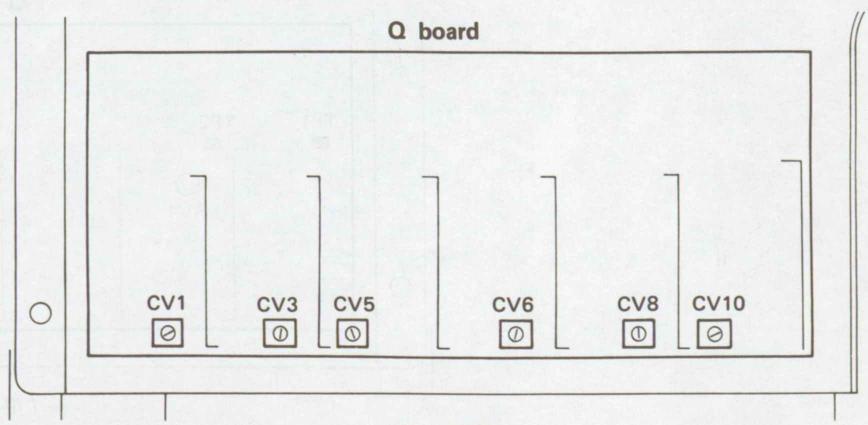


Fig. 5-29.

2. **Q Board Input Circuit Level Adjustment**

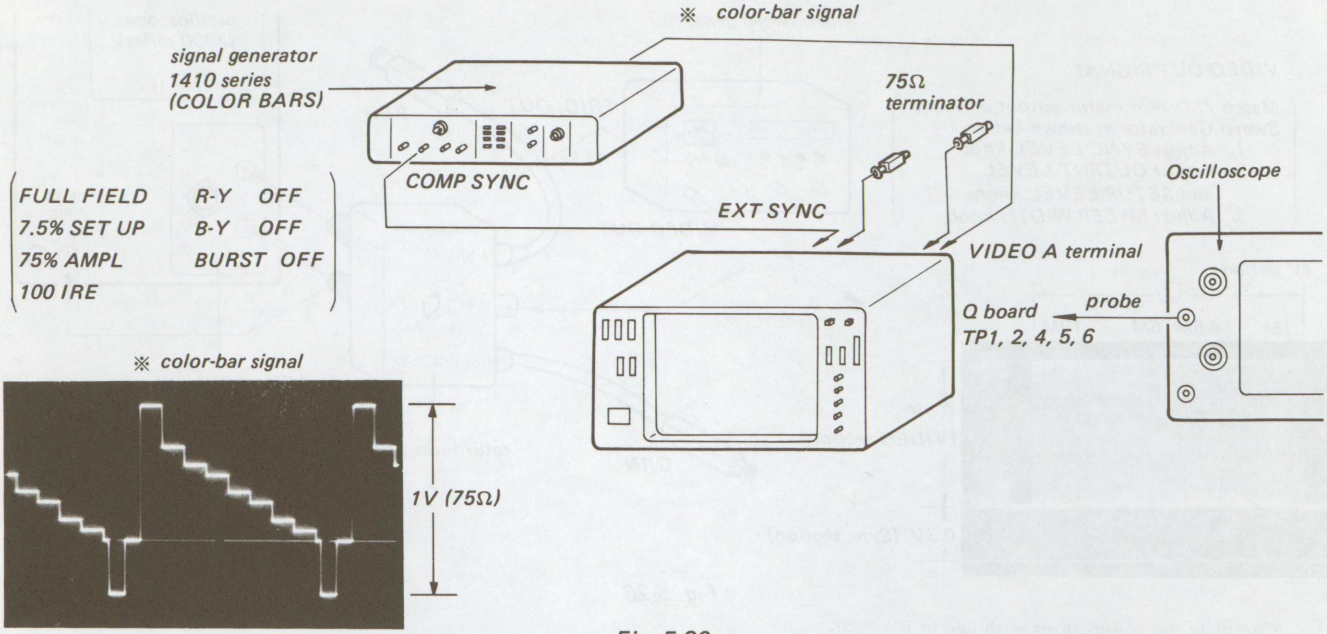


Fig. 5-30.

1. Complete the connections as shown in Fig. 5-30.
2. Turn on the power. Set the INPUT switch to A and the SYNC switch to EXT.
3. Connect the probe of the oscilloscope to TP 1 on the Q board. Adjust the vertical amplitude (VOLTS/DIV, VAR knobs) of the oscilloscope so that the output waveform is on the full scale. (See Fig. 5-31.)
4. Remove the color-bar signal and the 75Ω terminator from the VIDEO A terminal, connect them to the VIDEO B terminal.
5. Connect the oscilloscope probe to TP 2. Adjust RV 1 on the Q board so that the output waveform at TP 2 matches the scale on which the waveform at TP 1 observed in Step 3 matched. (i.e., make the output waveform level at TP 2 same with that at TP 1.)
6. Match the Q board outputs of the R, G, and B circuits in the same procedure.

Circuit	Test Point	Adjusting VR
R circuit	TP 4	RV 2
G circuit	TP 5	RV 3
B circuit	TP 6	RV 4

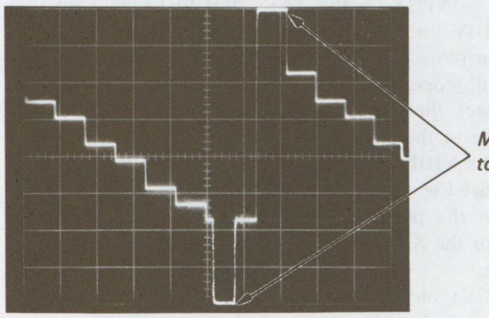


Fig. 5-31.

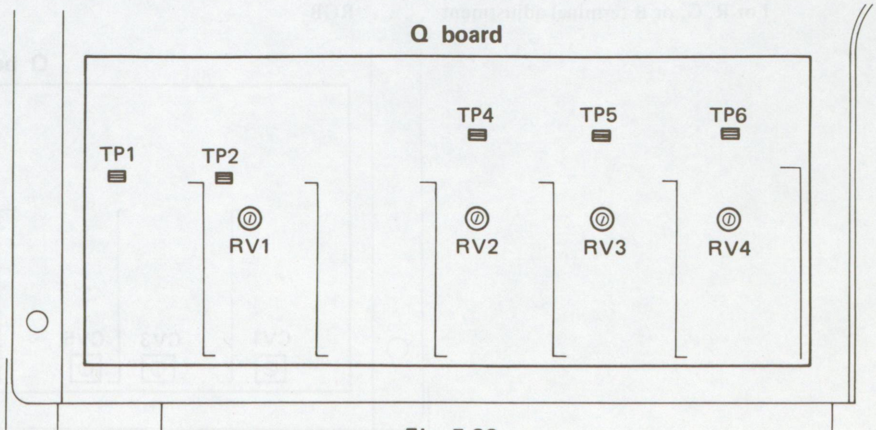


Fig. 5-32.

3. Q Board Input Circuit Frequency Characteristic Adjustment

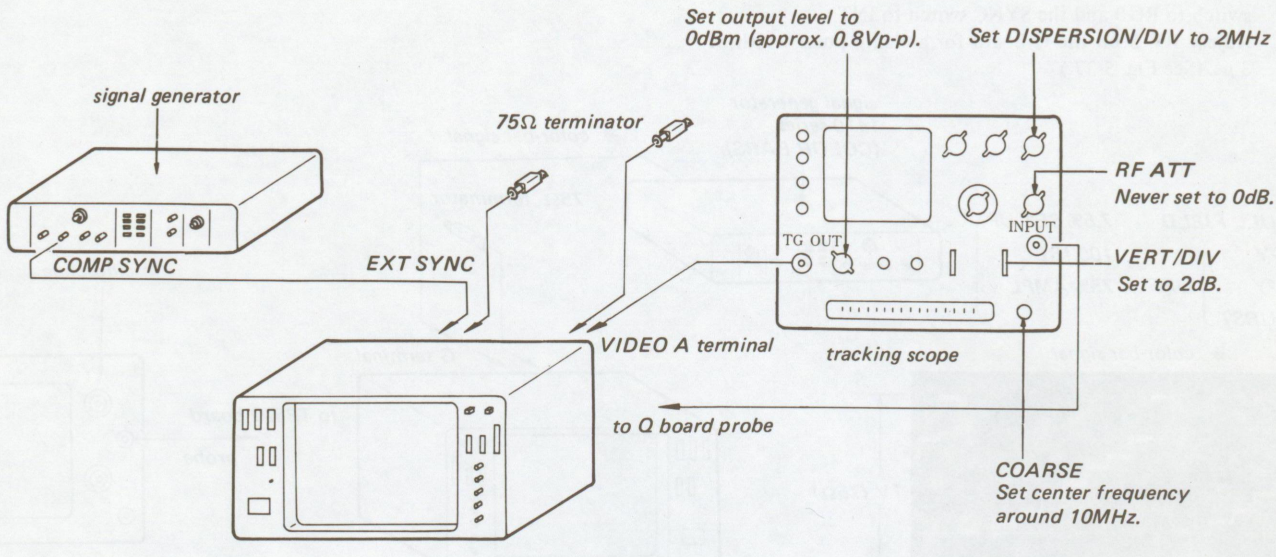
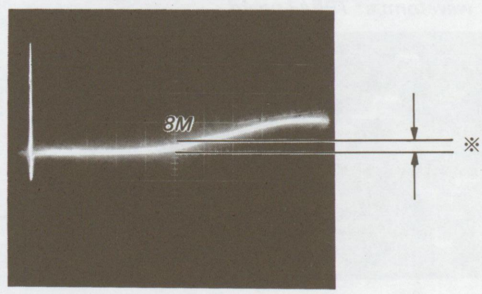


Fig. 5-33.

1. Complete the connections as shown in Fig. 5-33.
2. Connect the tracking scope probe to the THROUGH-OUT of the 75 Ω terminator connected to the VIDEO A terminal of the machine.
   Check that the output waveform on the tracking scope is flat in a range of 0 to 10MHz. (Probe correction)
3. Turn on the power of the BVM-1201. Set the SYNC switch to EXT and the INPUT switch to A.
4. Connect the probe to TP 1 on the Q board and adjust CV 2 so that the output waveform becomes flat in a range of 0 to 8 MHz. (See Fig. 5-34.)
5. Connect the TG OUT and the 75 Ω terminator to the VIDEO B terminal and set the INPUT switch to B.
   Connect the probe to TP 2 and adjust CV 4 in the same way as in the VIDEO A circuit.
6. Adjust R (TP 4, CV 7), G (TP 5, CV 9), B (TP 6, CV 11) circuits in the same way. (Set the INPUT switch to RGB.)



※ Within 0.5dB in a range of 0 to 8MHz

Fig. 5-34.

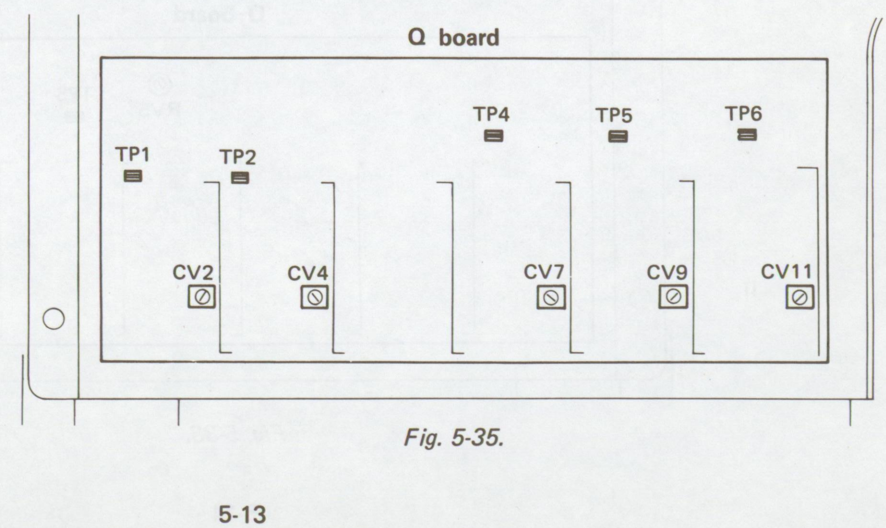


Fig. 5-35.

4. Q Board Clamp Pulse Width Adjustment

1. Complete the connections as shown in Fig. 5-36.
2. Turn on the power of the BVM-1201. Set the INPUT switch to RGB and the SYNC switch to INT.
3. Adjust RV 5 on the Q board for a clamp pulse width of 3 μs. (See Fig. 5-37.)

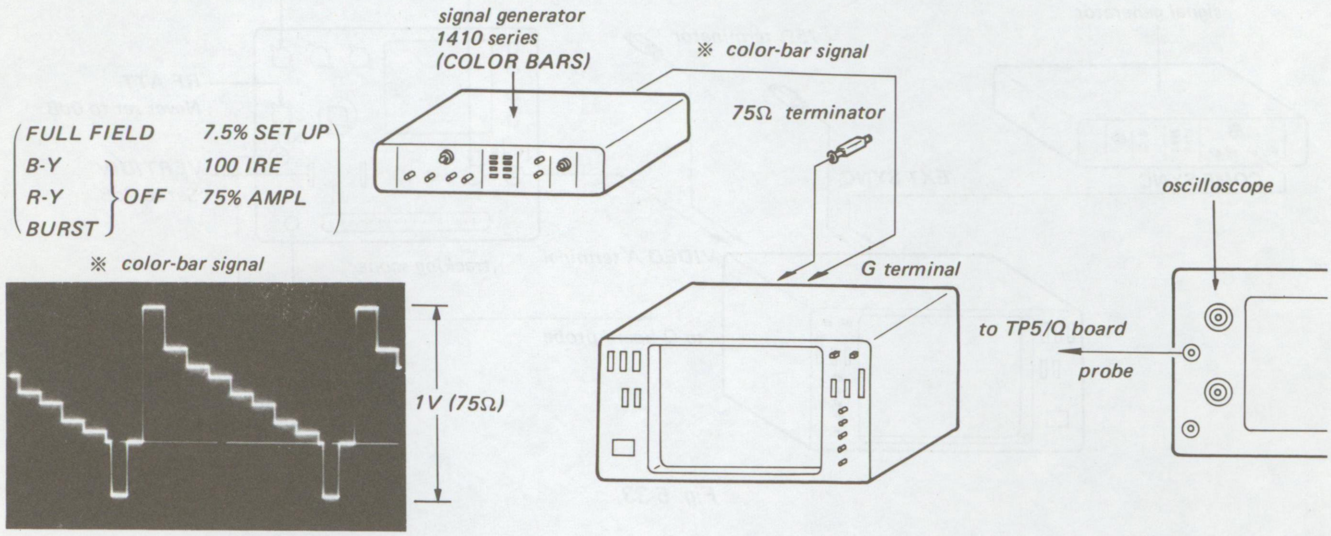


Fig. 5-36.

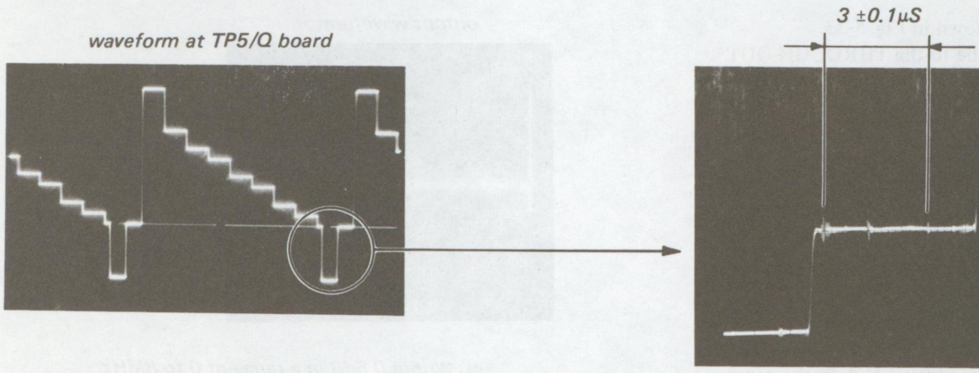


Fig. 5-37.

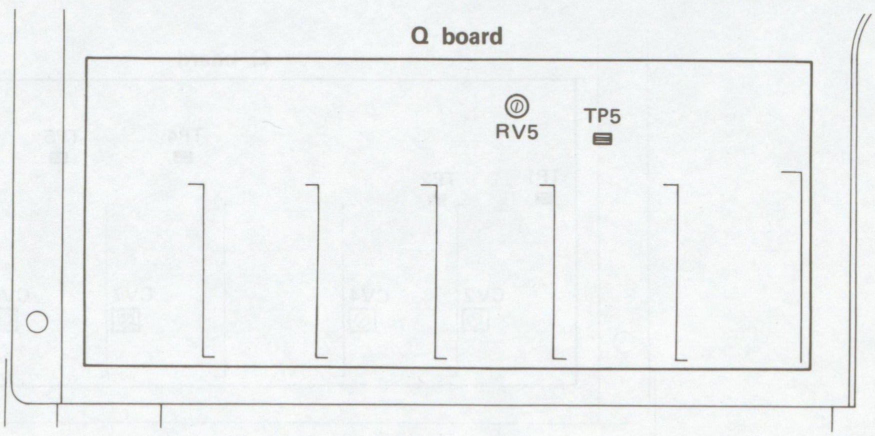


Fig. 5-38.

5. BA Board 3.58 MHz OSC Amplitude Adjustment

1. Complete the connections as shown in Fig. 5-39.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Turn L4 on the BA board for maximum amplitude of the 3.58 MHz waveform. (Note that it should be 1.2 ± 0.3 Vp-p.) (See Fig. 5-40.)

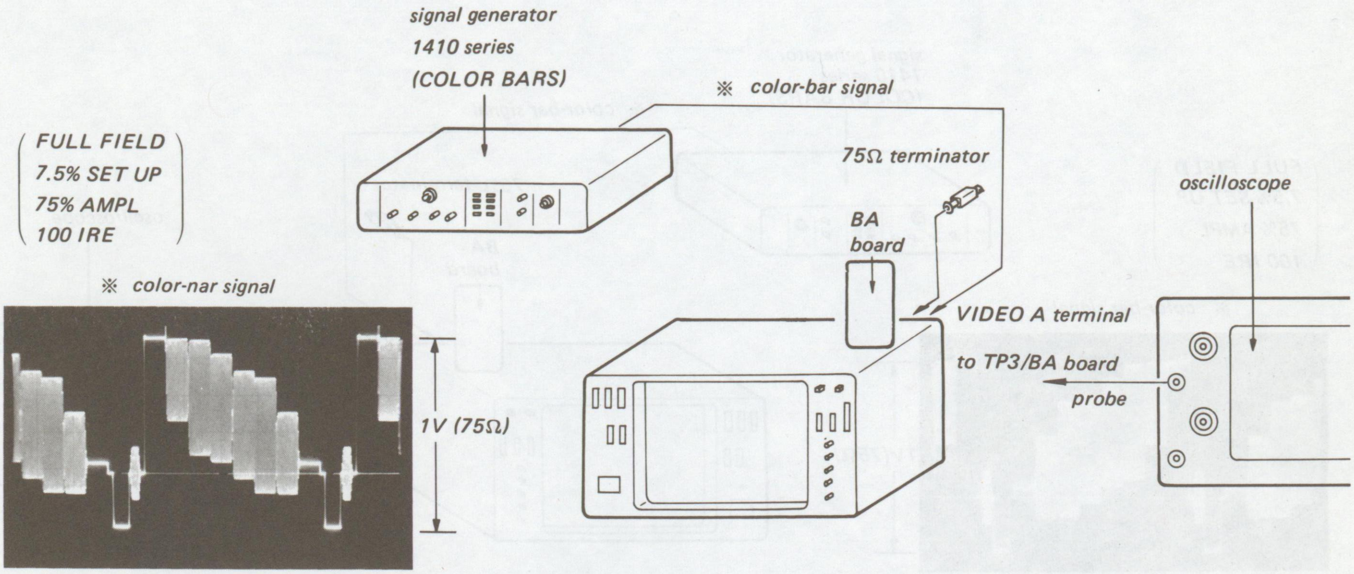


Fig. 5-39.

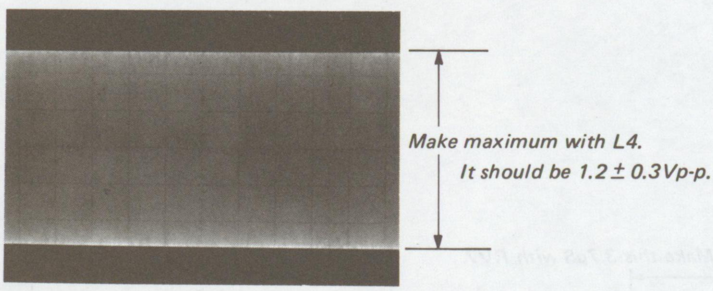


Fig. 5-40.

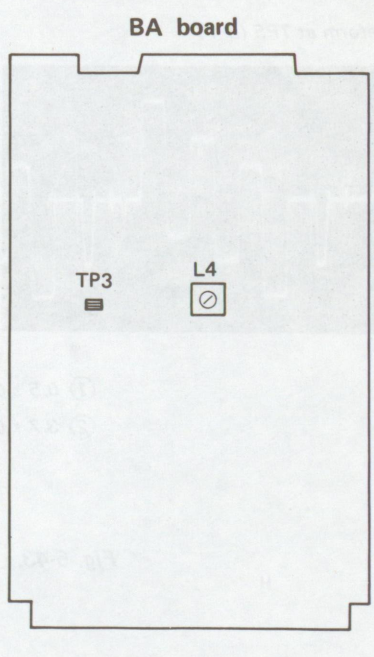


Fig. 5-41.

6. BA Board Burst Gate Pulse Width Adjustment

1. Complete the connections as shown in Fig. 5-42.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Turn Sl in the direction indicated by the arrow.
4. Adjust the burst gate pulse width with RV 6 and RV 7 on the BA board. (See Fig. 5-43.)

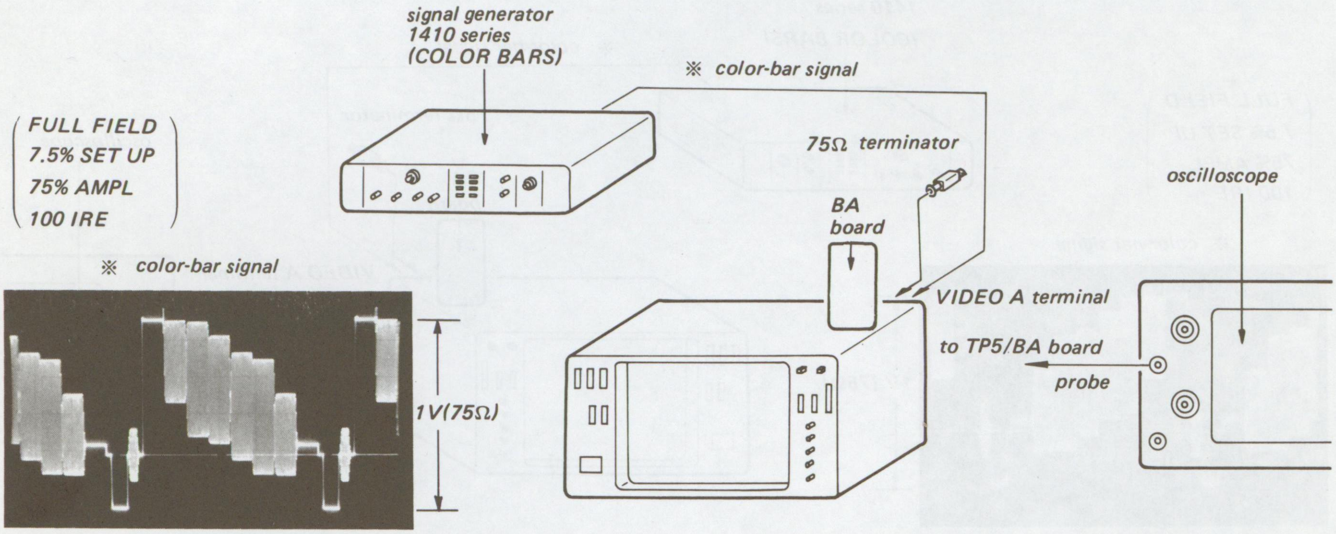


Fig. 5-42.

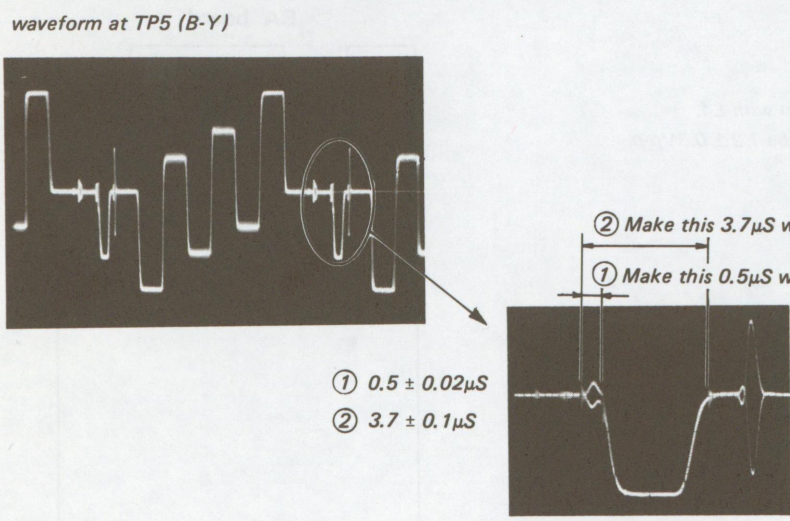


Fig. 5-43.

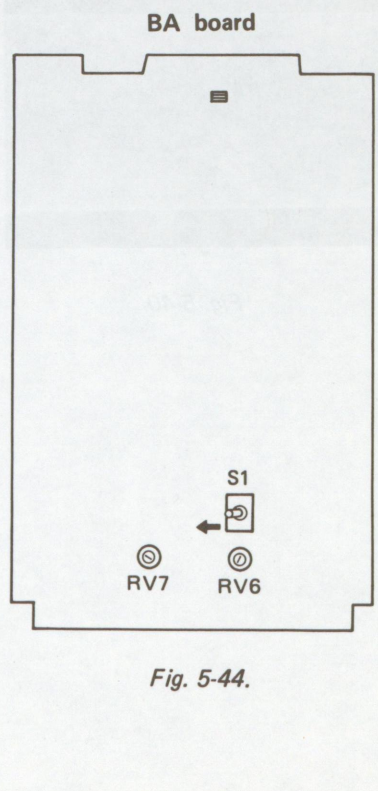
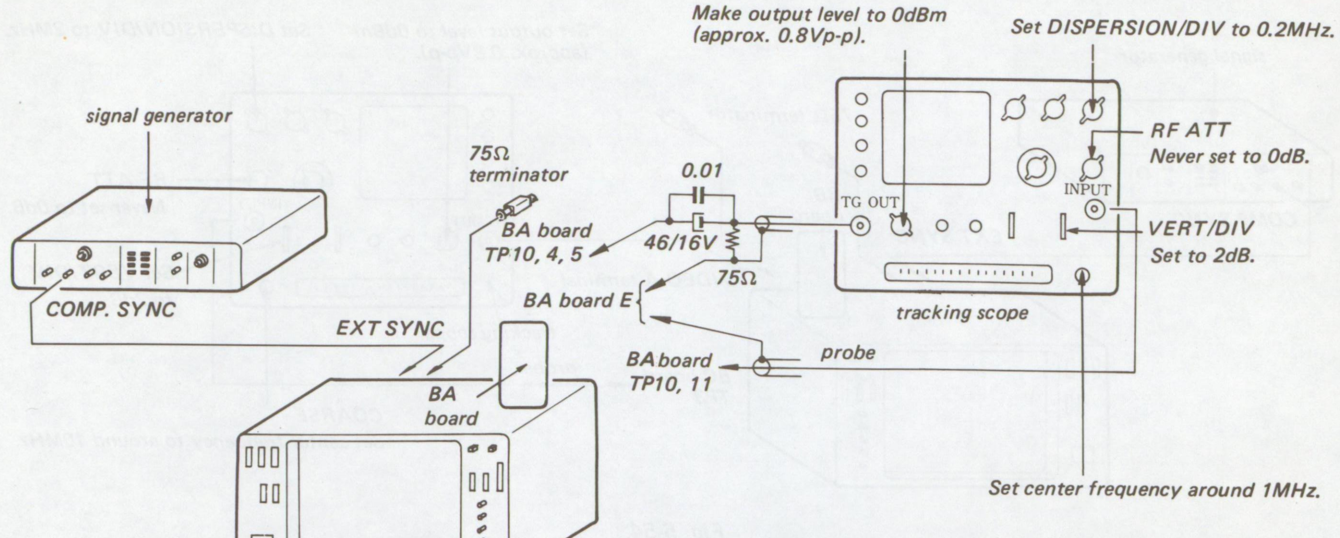


Fig. 5-44.

7. BA Board Color Difference Low Pass Filter Adjustment



Note: E of TG OUT and E of probe should be connected to the same point.

Fig. 5-45.

1. Complete the connections as shown in Fig. 5-45.
2. Connect the TG OUT of the tracking scope to TP 10 on the BA board via a capacitor and the probe also to TP 10. (See Fig. 5-45.)
   Check that the output waveform on the tracking scope is flat in a range around 0 to 2 MHz. (Probe correction)
3. Turn on the power of the BVM-1201 and set the SYNC switch to EXT.
4. Connect the probe to TP 4 and adjust L5 so that the low pass filter frequency characteristic is −3 dB at 1.2 MHz. (See Fig. 5-46.)
5. Disconnect the TG OUT signal from TP 10 and connect it to TP 11. Connect the probe to TP 5.
   Adjust the B-Y low pass filter frequency characteristic with using L7 in the same procedure as in Step 4.

Output waveform at TP4 & 5

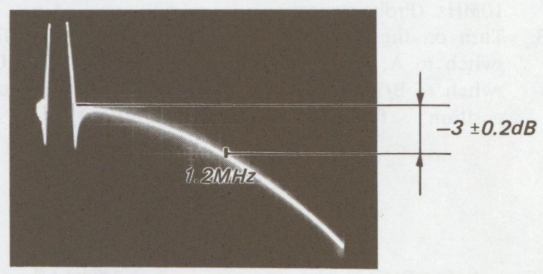
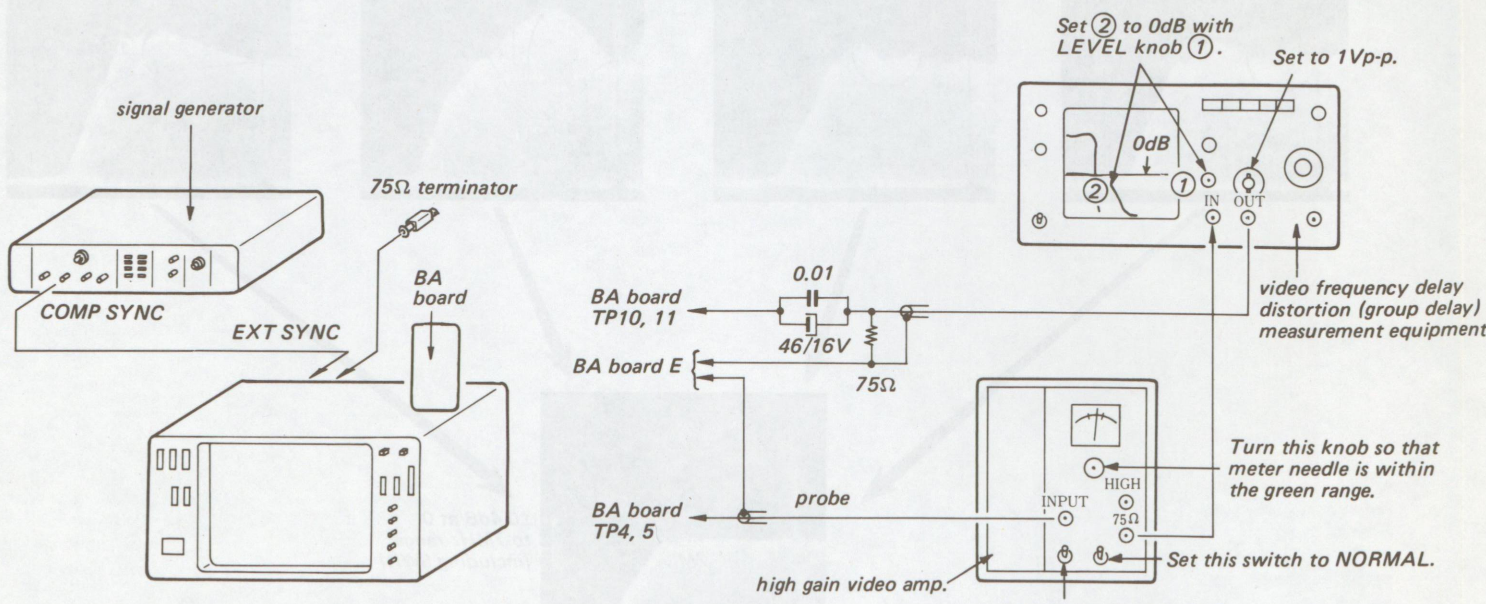


Fig. 5-46.



Note: The probe and the connection cable should be identical with those used in Fig. 5-45.

Fig. 5-47.

6. Complete the connections as shown in Fig. 5-47.
7. Connect the output of the group delay measurement equipment to TP 10 on the BA board via a capacitor and the probe to TP 4. (See Fig. 5-47.)
8. Turn L6 for the adjustment of the group delay characteristic of the R-Y low pass filter. (See Fig. 5-48.)(Make the flat section extend as much as possible.)
9. Disconnect the signal connected to TP 10 and connect it to TP 11. Connect the probe to TP 5.
10. Turn L8 for the adjustment of the B-Y low pass filter in the same way as in Step 8.
11. Change the connections as shown in Fig. 5-45.
12. Confirm the frequency characteristics (in Steps 4 and 5).

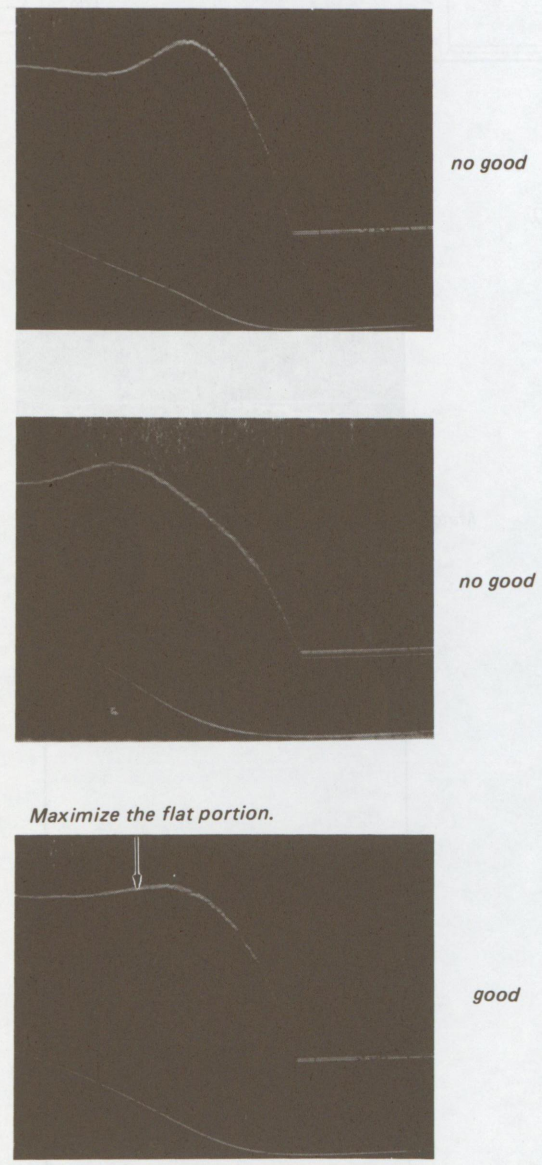


Fig. 5-48.

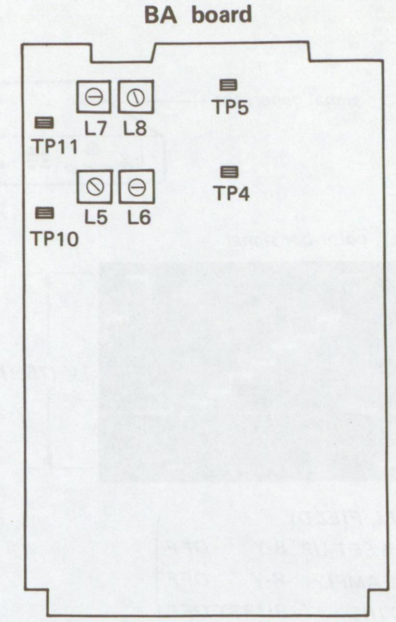
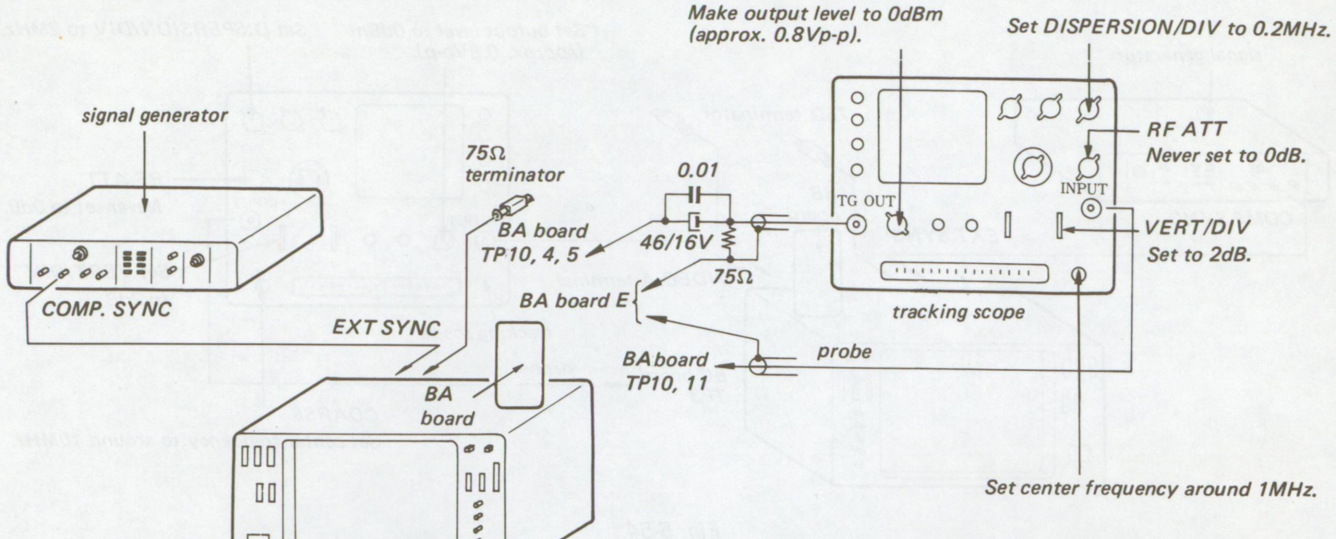


Fig. 5-49.

7. BA Board Color Difference Low Pass Filter Adjustment



Note: E of TG OUT and E of probe should be connected to the same point.

Fig. 5-45.

1. Complete the connections as shown in Fig. 5-45.
2. Connect the TG OUT of the tracking scope to TP 10 on the BA board via a capacitor and the probe also to TP 10. (See Fig. 5-45.)
   Check that the output waveform on the tracking scope is flat in a range around 0 to 2 MHz. (Probe correction)
3. Turn on the power of the BVM-1201 and set the SYNC switch to EXT.
4. Connect the probe to TP 4 and adjust L5 so that the low pass filter frequency characteristic is −3 dB at 1.2 MHz. (See Fig. 5-46.)
5. Disconnect the TG OUT signal from TP 10 and connect it to TP 11. Connect the probe to TP 5.
   Adjust the B-Y low pass filter frequency characteristic with using L7 in the same procedure as in Step 4.

Output waveform at TP4 & 5

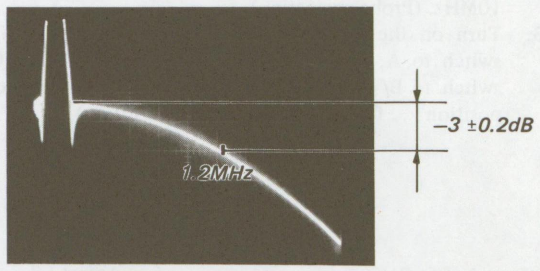
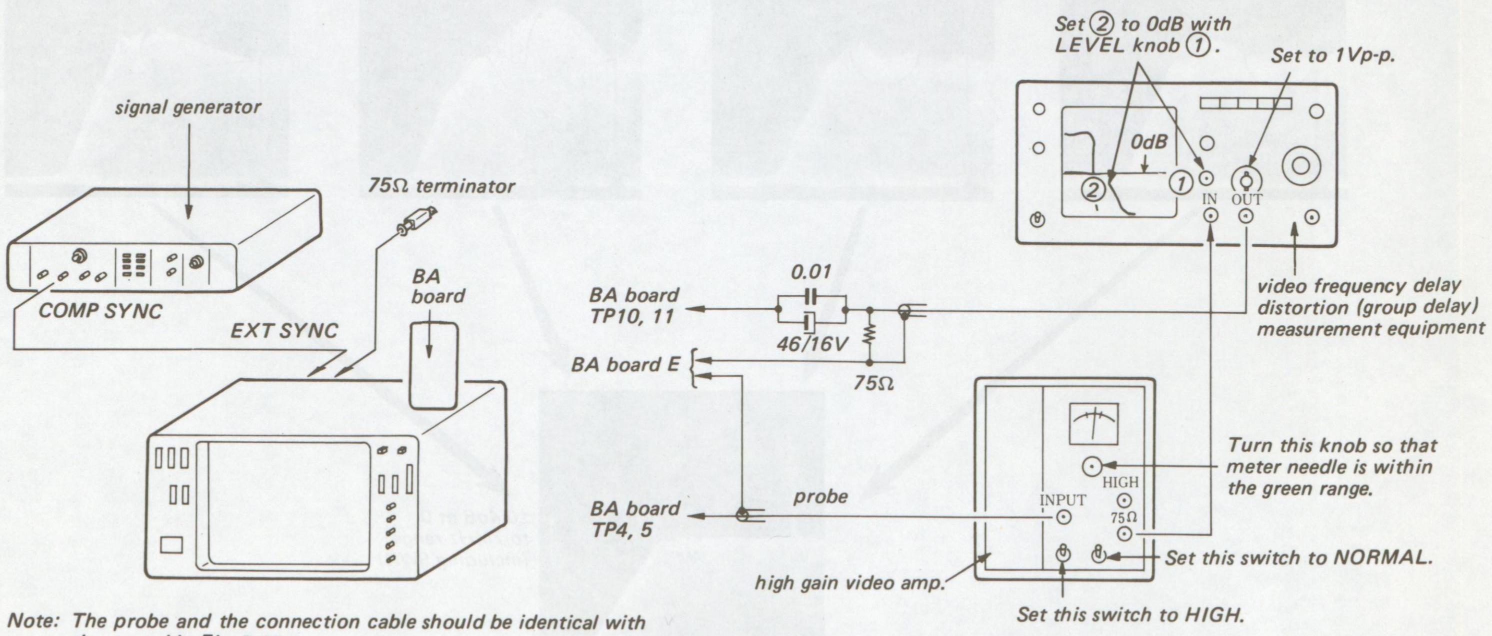


Fig. 5-46.



Note: The probe and the connection cable should be identical with those used in Fig. 5-45.

Fig. 5-47.

6. Complete the connections as shown in Fig. 5-47.
7. Connect the output of the group delay measurement equipment to TP 10 on the BA board via a capacitor and the probe to TP 4. (See Fig. 5-47.)
8. Turn L6 for the adjustment of the group delay characteristic of the R-Y low pass filter. (See Fig. 5-48.)(Make the flat section extend as much as possible.)
9. Disconnect the signal connected to TP 10 and connect it to TP 11. Connect the probe to TP 5.
10. Turn L8 for the adjustment of the B-Y low pass filter in the same way as in Step 8.
11. Change the connections as shown in Fig. 5-45.
12. Confirm the frequency characteristics (in Steps 4 and 5).

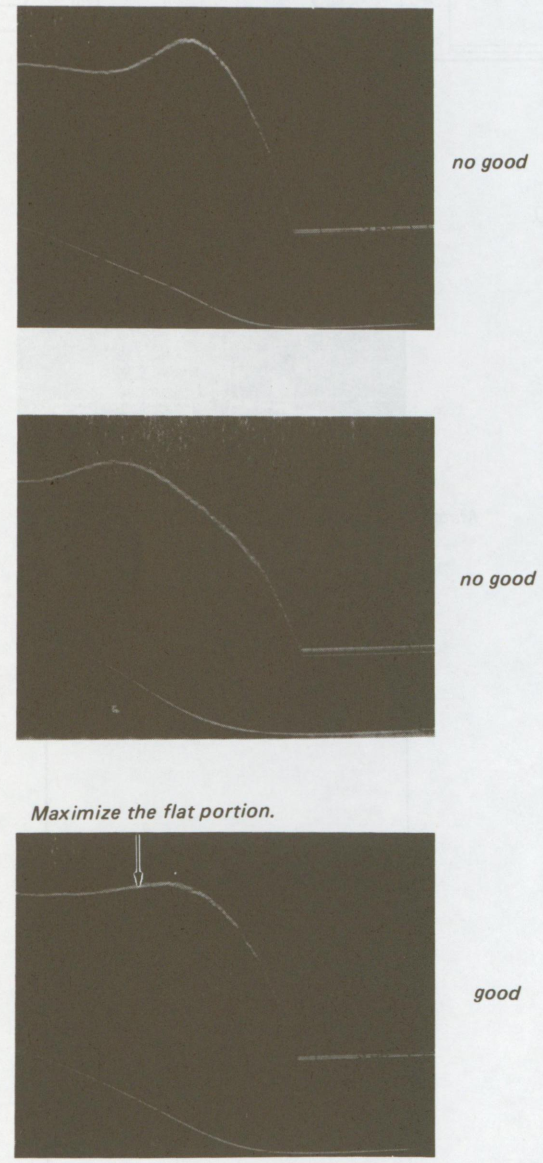


Fig. 5-48.

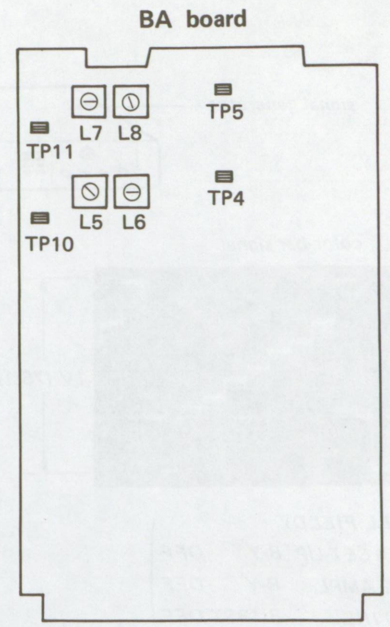


Fig. 5-49.

8. BB Board Y Level Adjustment

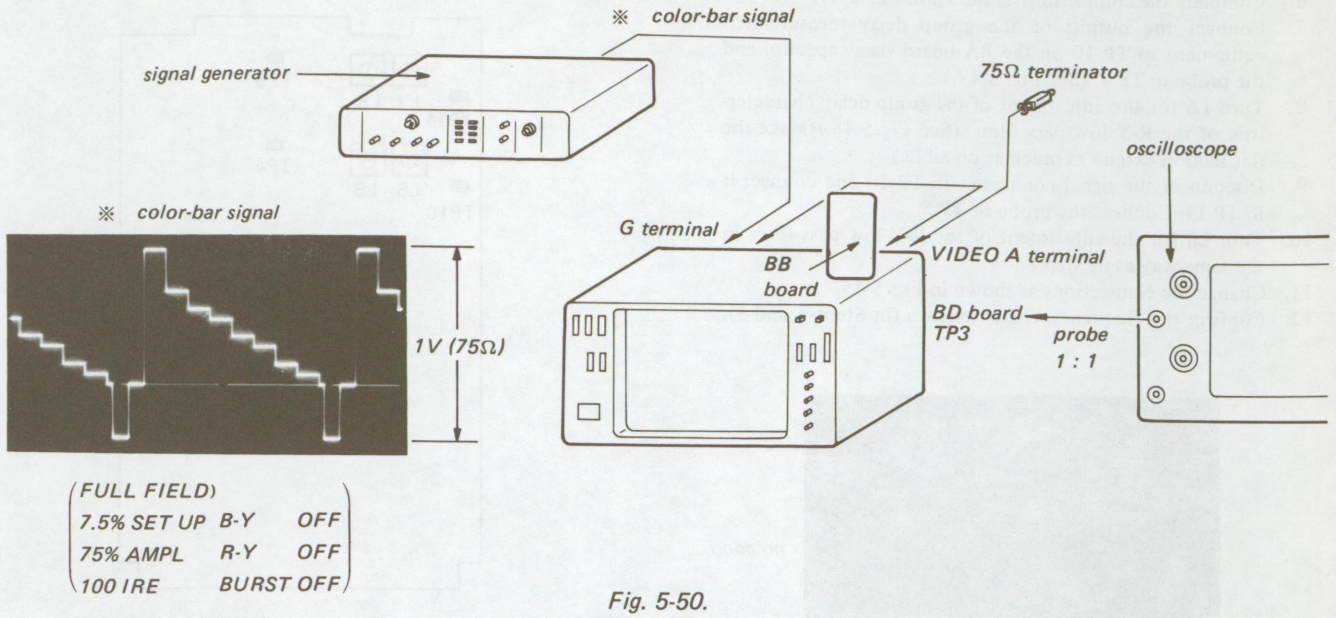


Fig. 5-50.

1. Complete the connections as shown in Fig. 5-50.
2. Turn on the power of the BVM-1201. Set the INPUT switch to RGB and the SYNC switch to INT.
3. Connect the probe (of 1:1) to TP 3 on the BD board and set the oscilloscope sensitivity to 10mv/Div.
4. Set the BRIGHTNESS knob to MIN. (just before the detent position) and turn the CONTRAST knob for matching the BRT pulse and 100 IRE level. (See Fig. 5-51.)
5. Set INPUT switch to A position and adjust RV4 on BB board for matching the BRT pulse and 100 IRE level.

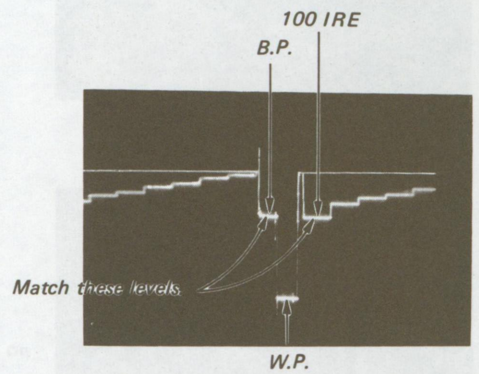


Fig. 5-51.

BB board

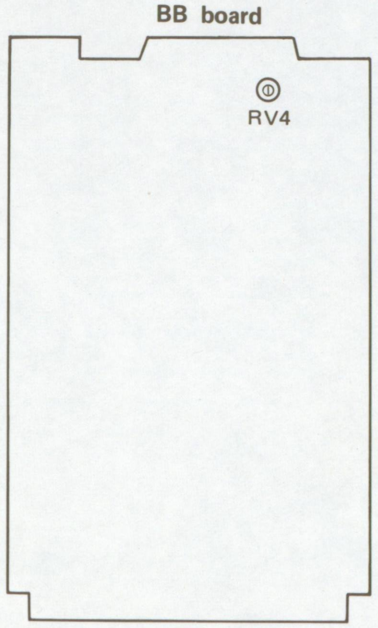


Fig. 5-52.

BD board

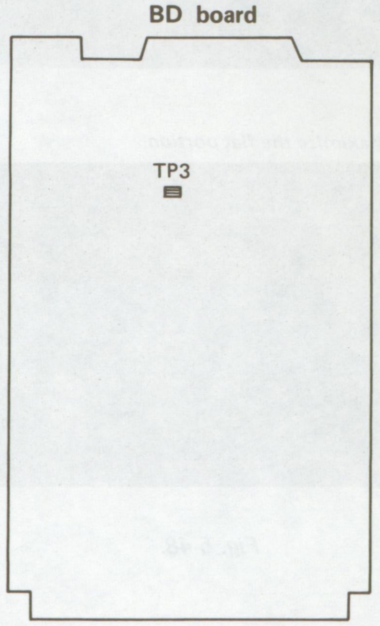


Fig. 5-53.

9. BB Board Y System Frequency Characteristic Adjustment

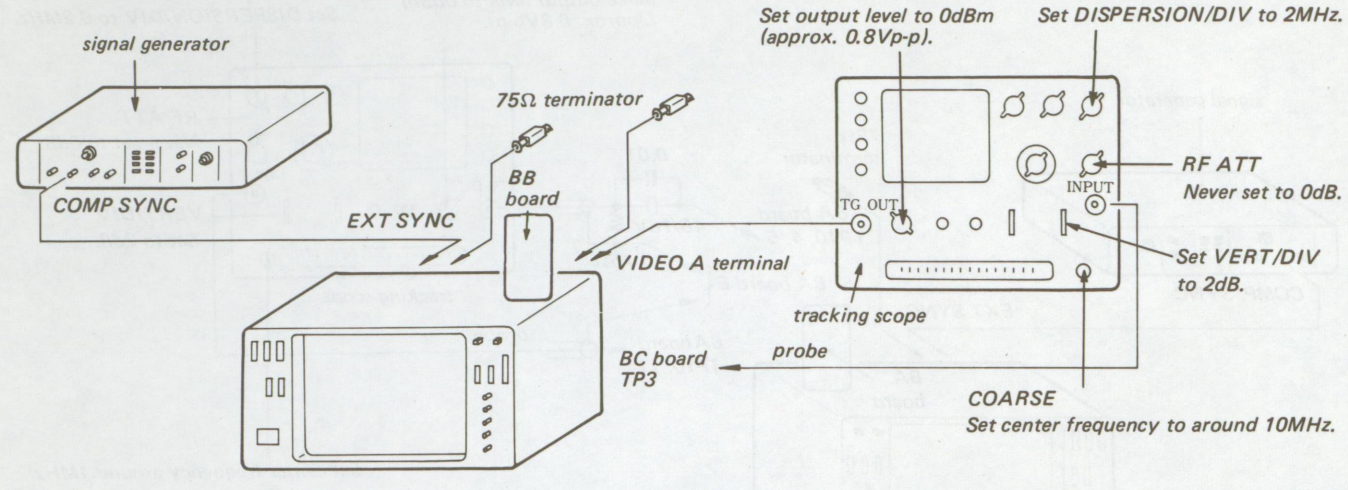


Fig. 5-54.

1. Complete the connections as shown in Fig. 5-54.
2. Connect the probe to the through out of the 75 Ω terminator connected to the VIDEO A terminal of the BVM-1201.
   Check that the output waveform is flat in a range of 0 to 10MHz. (Probe correction)
3. Turn on the power of the BVM-1201. Set the INPUT switch to A, the SYNC switch to EXT, and the MODE switch to B/W. (Set the APEATURE knob to the detent position . . . fully counterclockwise position.)
4. Adjust RV 3, RV 5, and L3 on the BB board and CV2 on the Q board so that the frequency characteristic of the delay line is flat (SWR is minimum) in a range of 0 to 7 MHz. (See Fig. 5-55.)
5. Connect the TG OUT signal and the 75 Ω terminator to the VIDEO B terminal and set the INPUT switch to B.
6. Adjust CV4 on the Q board in the same way as in Step 4.

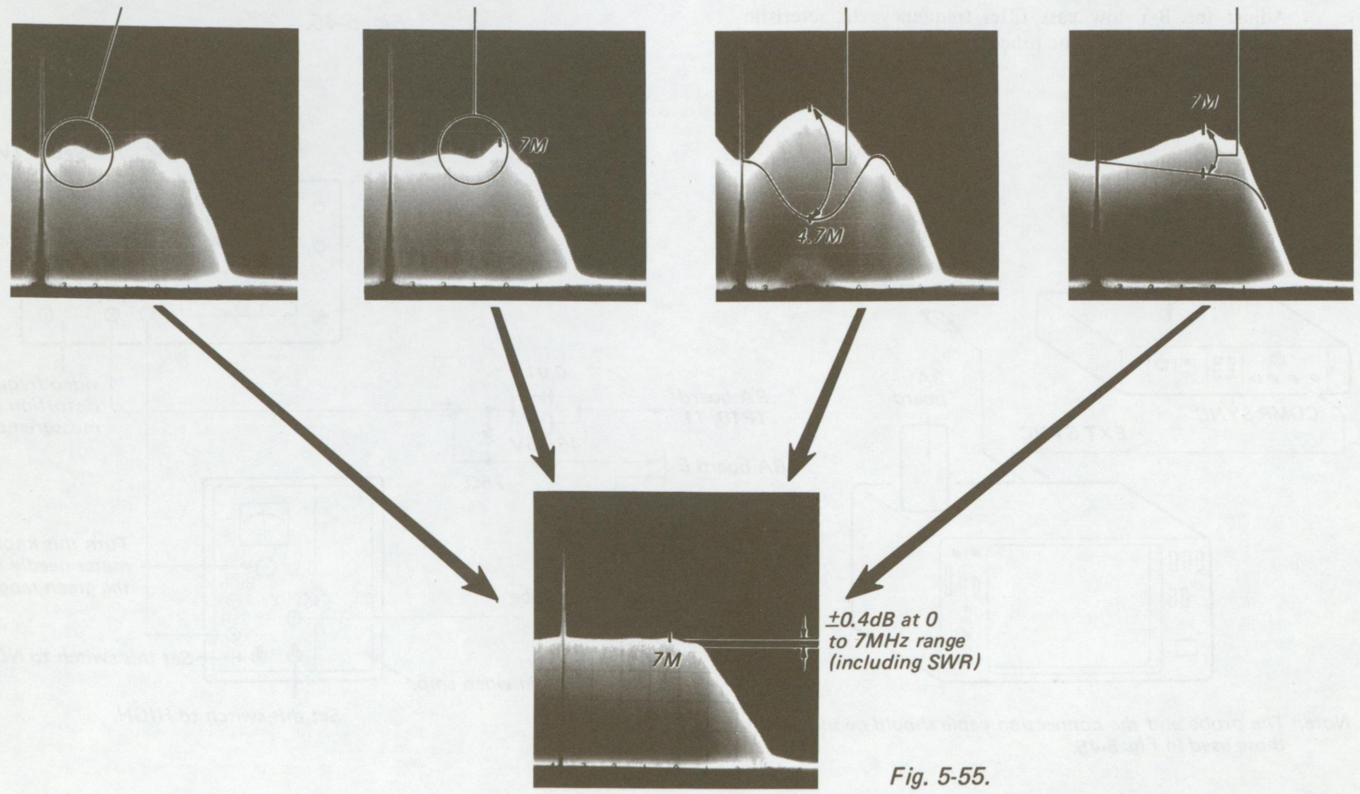


Fig. 5-55.

7. Complete the connections as shown in Fig. 5-56.
8. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
9. Adjust L1 on the BB board for minimum 3.58 MHz component. (3.58 MHz trap adjustment) (See Fig. 5-57.)

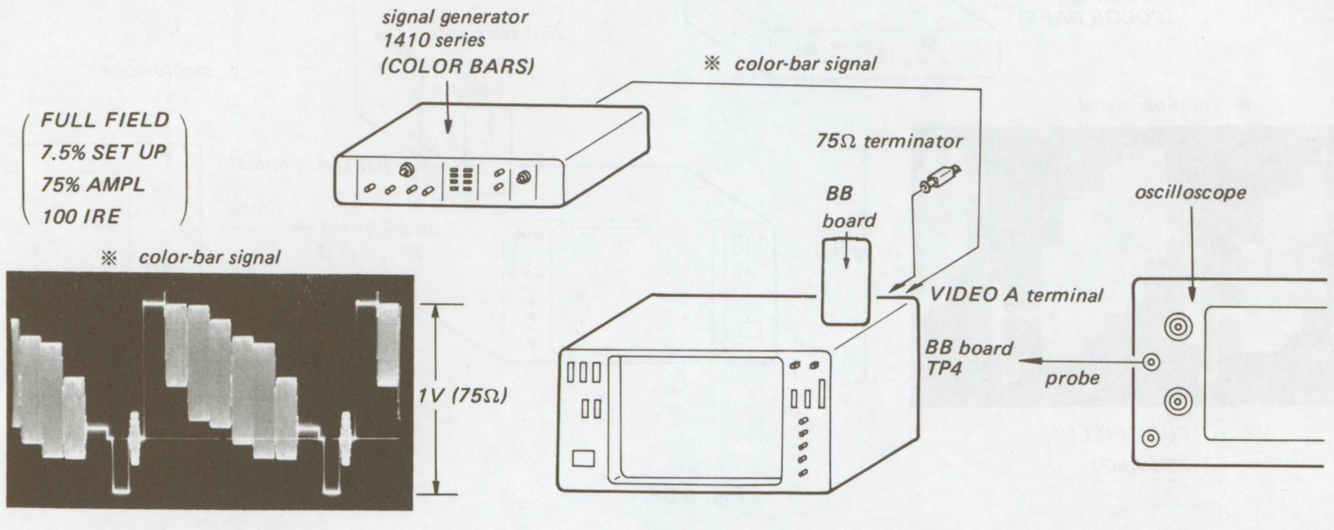


Fig. 5-56.

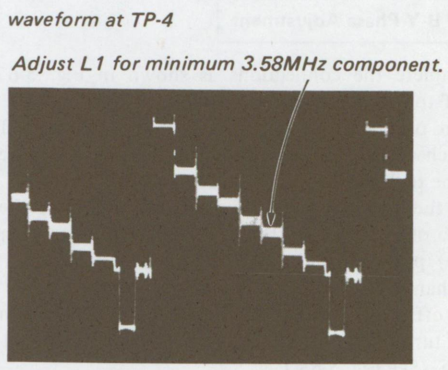


Fig. 5-57.

10. Complete the connections as shown in Fig. 5-58.
11. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.

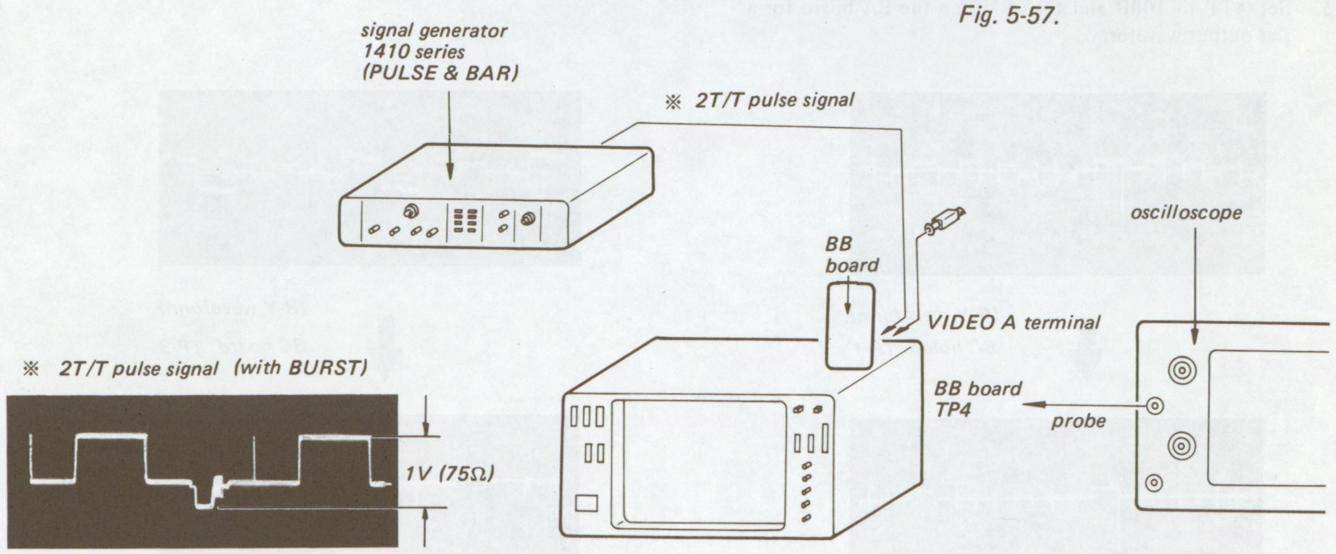


Fig. 5-58.

12. Turn L2 on the BB board for adjusting the TP 4 waveform as shown in Fig. 5-59. (2T pulse correction adjustment)
13. Change the input signal to the T pulse from the 2T pulse and check that the TP 4 waveform is almost the same as the one shown in Fig. 5-60. (The balance should not be unbalanced extremely.)

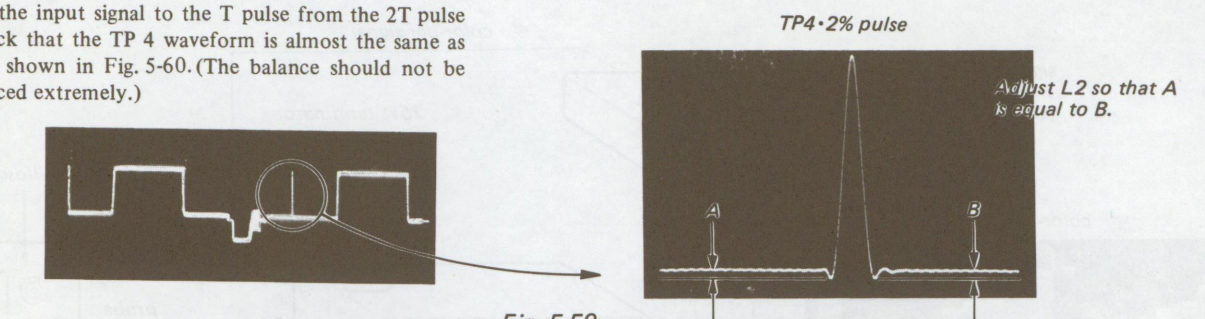


Fig. 5-59.

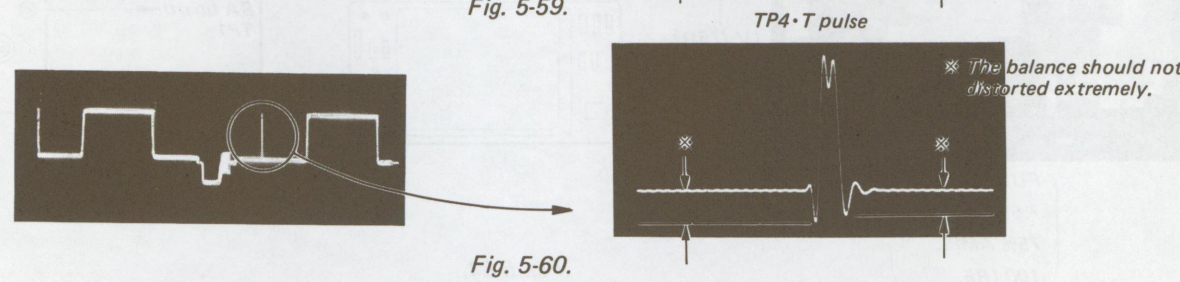


Fig. 5-60.

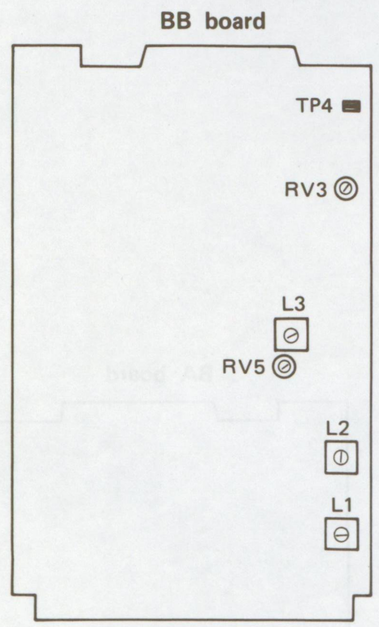


Fig. 5-61.

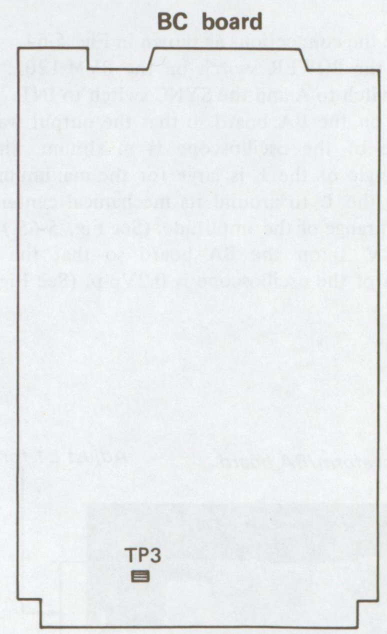


Fig. 5-62.

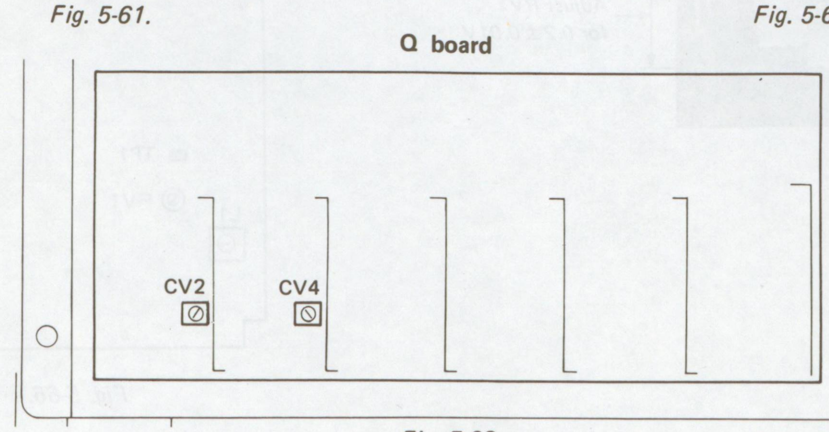


Fig. 5-63.

7. Complete the connections as shown in Fig. 5-56.
8. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
9. Adjust L1 on the BB board for minimum 3.58 MHz component. (3.58 MHz trap adjustment) (See Fig. 5-57.)

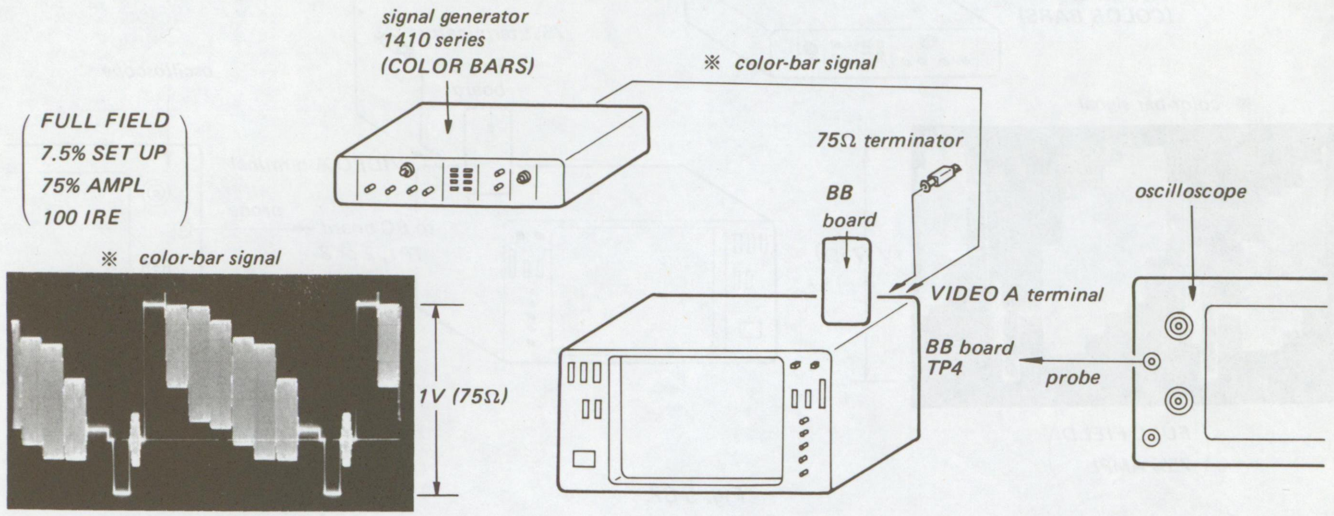


Fig. 5-56.

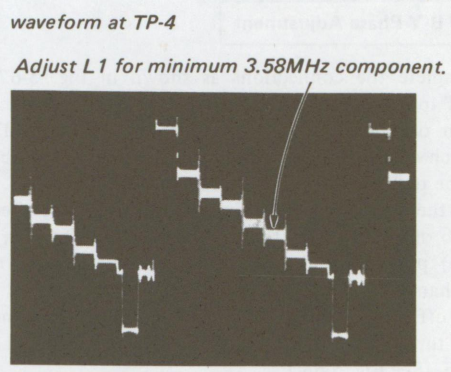


Fig. 5-57.

10. Complete the connections as shown in Fig. 5-58.
11. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.

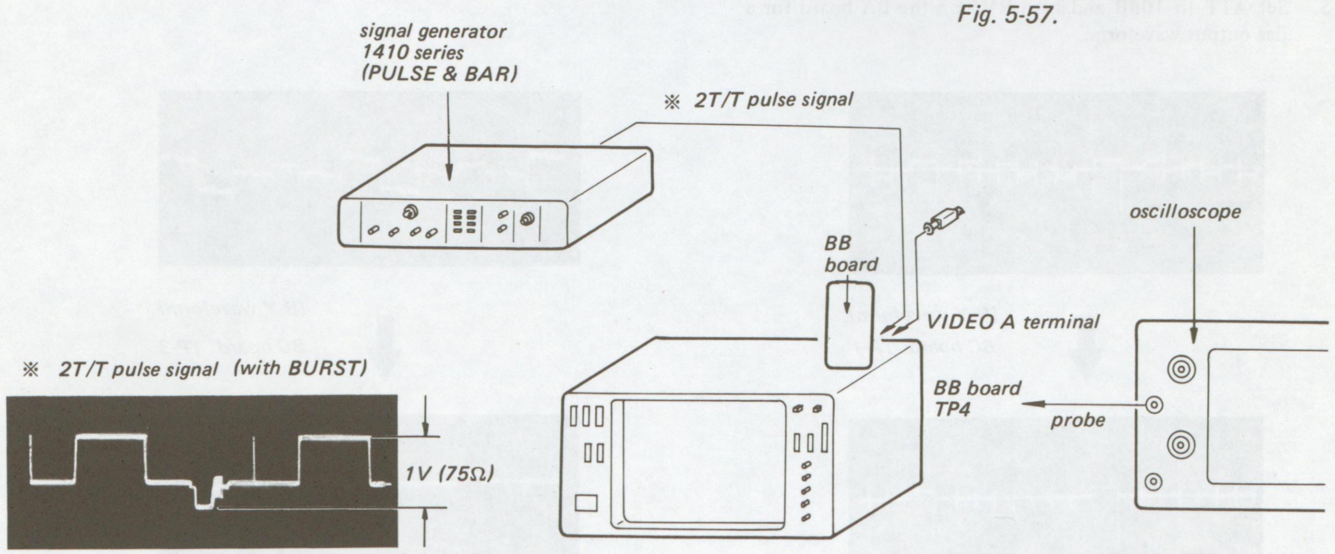


Fig. 5-58.

12. Turn L2 on the BB board for adjusting the TP 4 waveform as shown in Fig. 5-59. (2T pulse correction adjustment)
13. Change the input signal to the T pulse from the 2T pulse and check that the TP 4 waveform is almost the same as the one shown in Fig. 5-60. (The balance should not be unbalanced extremely.)

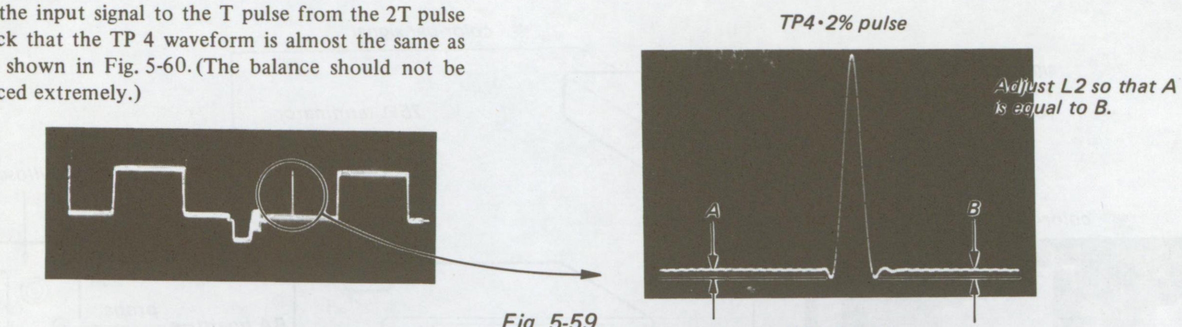


Fig. 5-59.

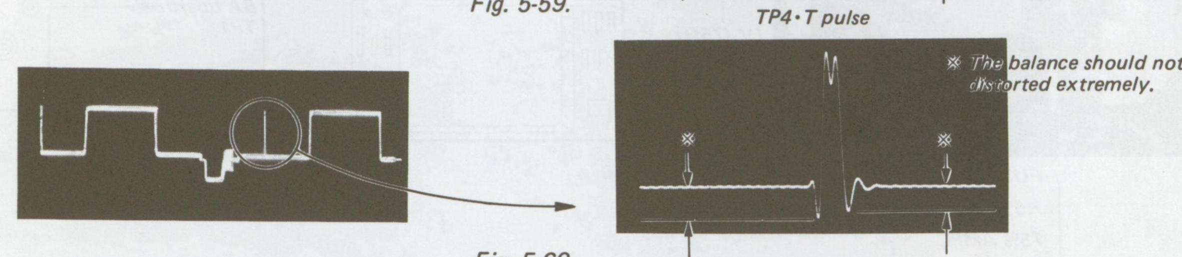


Fig. 5-60.

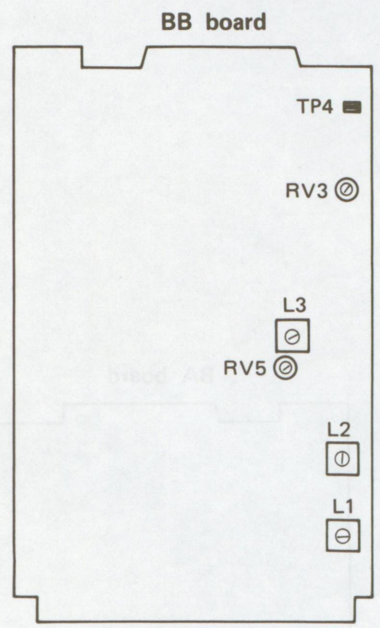


Fig. 5-61.

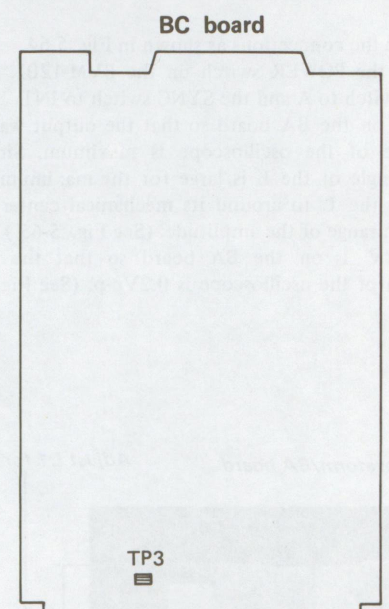


Fig. 5-62.

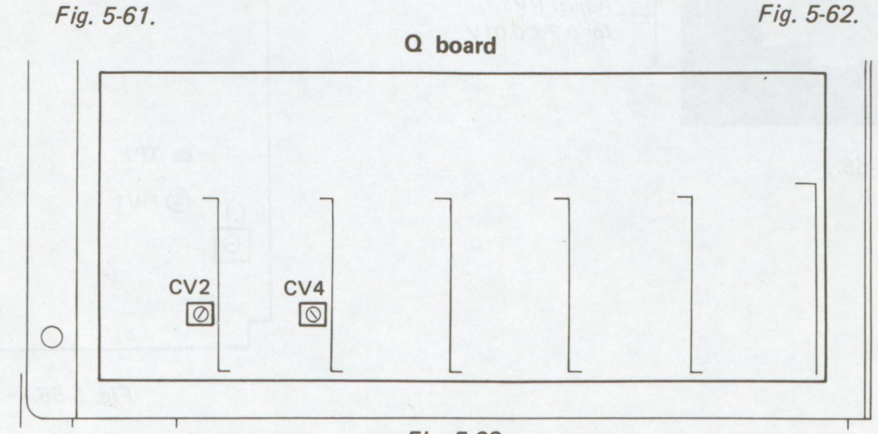


Fig. 5-63.

10. BA Board Band Pass Amplifier Adjustment

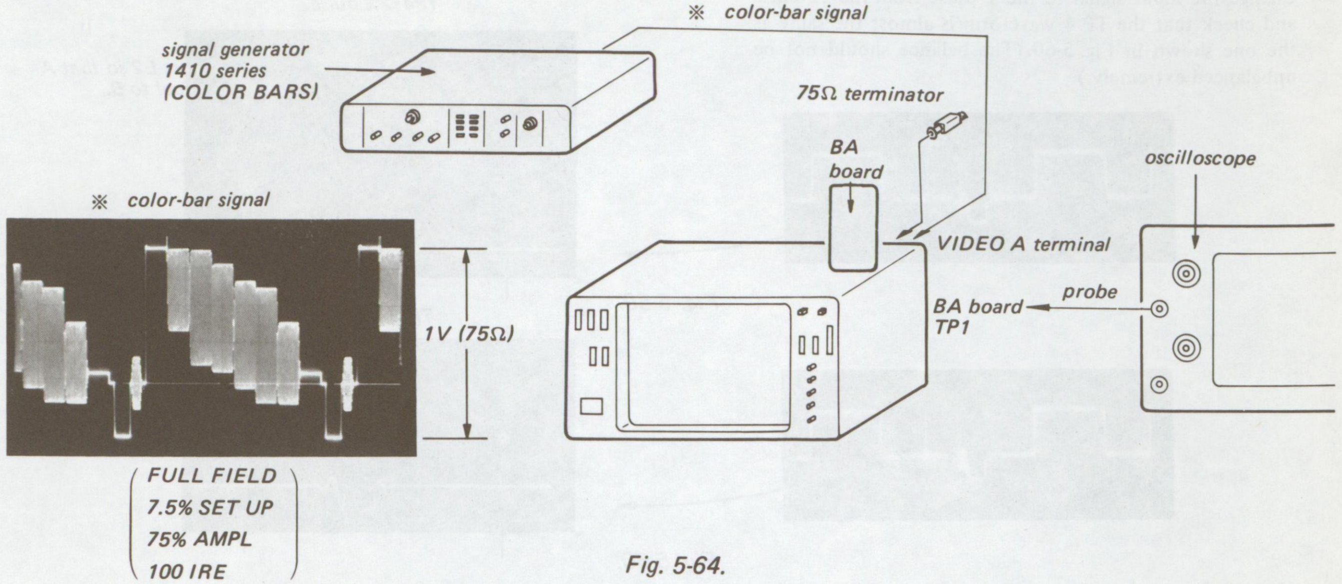


Fig. 5-64.

1. Complete the connections as shown in Fig. 5-64.
2. Turn on the POWER switch on the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Turn L1 on the BA board so that the output waveform amplitude of the oscilloscope is maximum. Since the turning angle of the L is large for the maximum amplitude, set the L to around its mechanical center in the maximum range of the amplitude. (See Fig. 5-65.)
4. Adjust RV 1 on the BA board so that the output waveform of the oscilloscope is 0.2Vp-p. (See Fig. 5-65.)

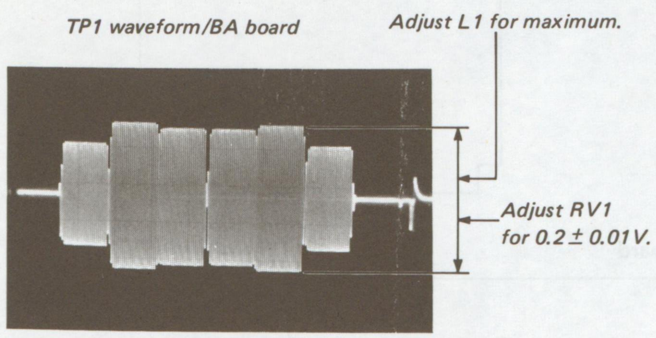


Fig. 5-65.

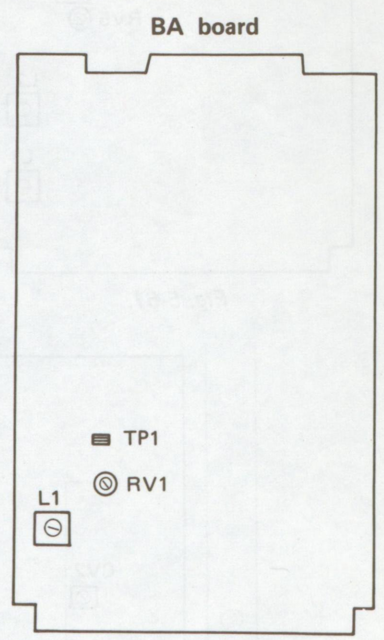


Fig. 5-66.

11. Color Difference Phase and Level Adjustments

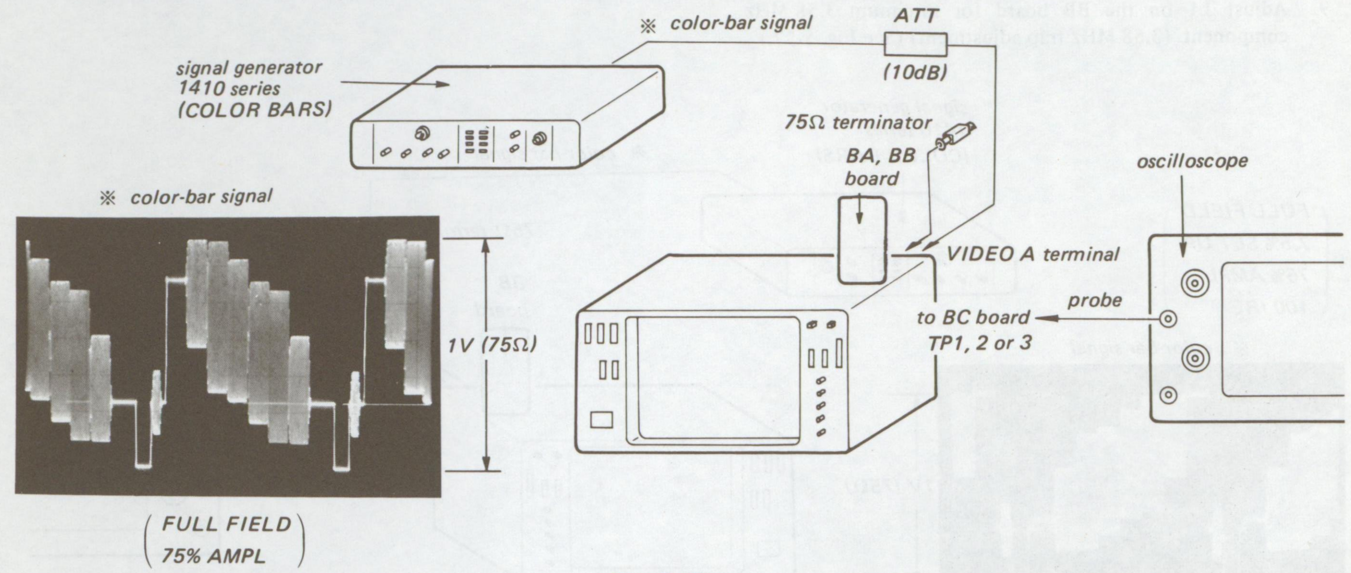


Fig. 5-67.

R-Y and B-Y Phase Adjustment

1. Complete the connections as shown in Fig. 5-67. (Set ATT to 0dB.)
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT. Connect the probe to TP 1 on the BC board.
3. Set the oscilloscope sensitivity to 50mV/DIV, the HUE knob of the BVM-1201 to its detent (fully counterclockwise) position, and the RV5 on the BA board to the mechanical center.
4. Cut off the R-Y and the Y signals of the signal generator and turn the SUB HUE control for a flat output waveform. (See Fig. 5-68.)
5. Set ATT to 10dB and turn RV5 on the BA board for a flat output waveform.
6. Extract ATT (0dB) and turn SUB HUR control for a flat output waveform.
7. Repeat Steps 5 and 6 three times and check that the SUB HUE control is almost at the mechnical center.
8. Connect the probe to TP 3 on the BC board. Feed in the R-Y signal from the signal generator and disconnect the B-Y signal. (The Y signal remains in OFF.)
9. Turn RV2 on the BA board for a flat output waveform. (See Fig. 5-69.)

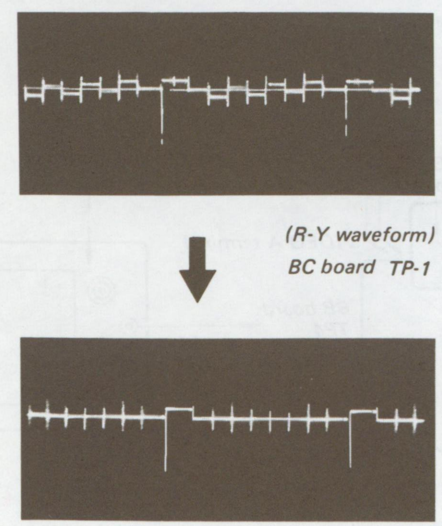


Fig. 5-68.

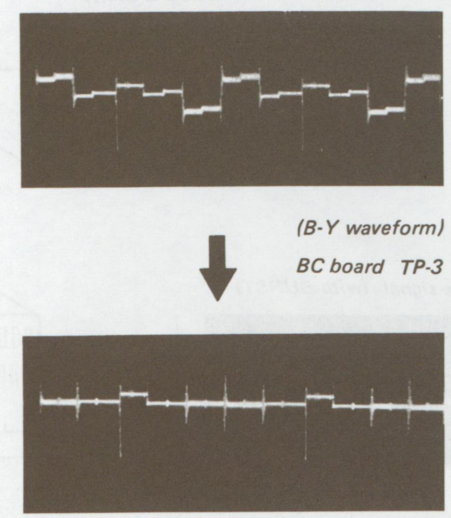


Fig. 5-69.

R-Y and B-Y Level Adjustments

1. Complete the connections as shown in Fig. 5-67.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the probe to TP 1 on the BC board and turn RV 3 on the BA board for adjusting the R-Y level as shown in Fig. 11-5.
4. Connect the probe to TP 3 on the BC board and turn RV 4 on the BA board for adjusting the B-Y level as shown in Fig. 11-6.

TP1 R·OUT waveform

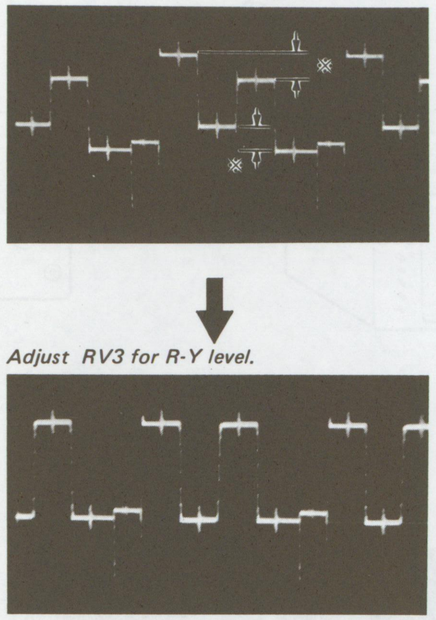


Fig. 5-70.

TP3 B·OUT waveform

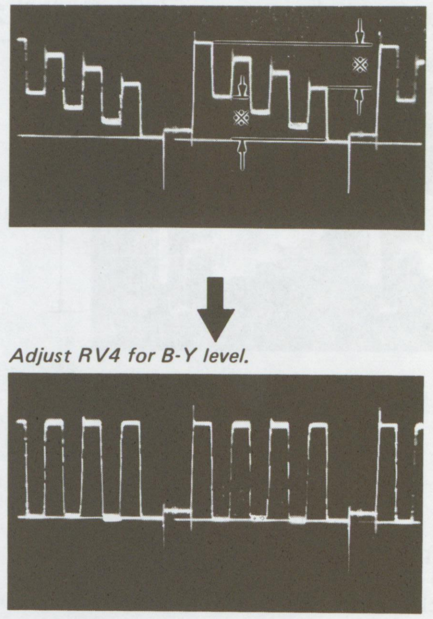


Fig. 5-71.

G-Y Phase and Level Adjustments

1. Complete the connections as shown in Fig. 5-67.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the probe to TP 2 on the BC board and turn RV 2 on the BB board for adjusting the G-Y phase as shown in Fig. 5-72.
4. Turn RV 1 on the BB board for adjusting the G-Y level as shown in Fig. 5-72.

TP2 G·OUT waveform

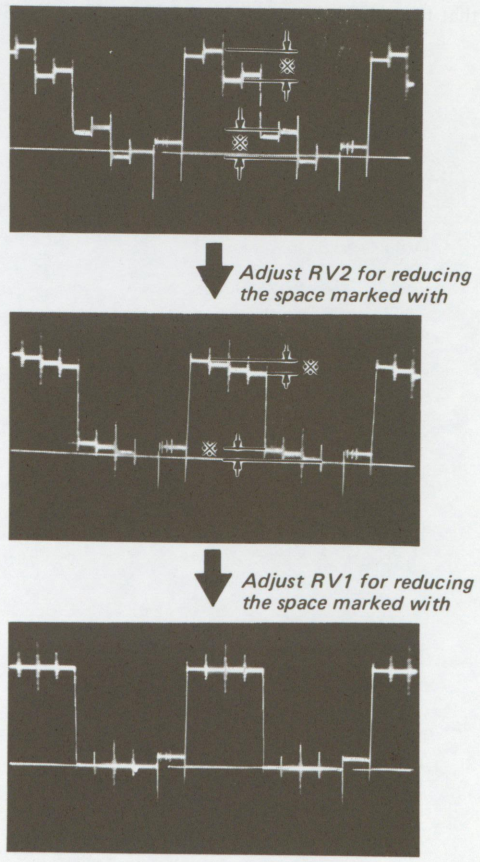


Fig. 5-72.

Vector Out Adjustment

1. Complete the connections as shown in Fig. 5-73.

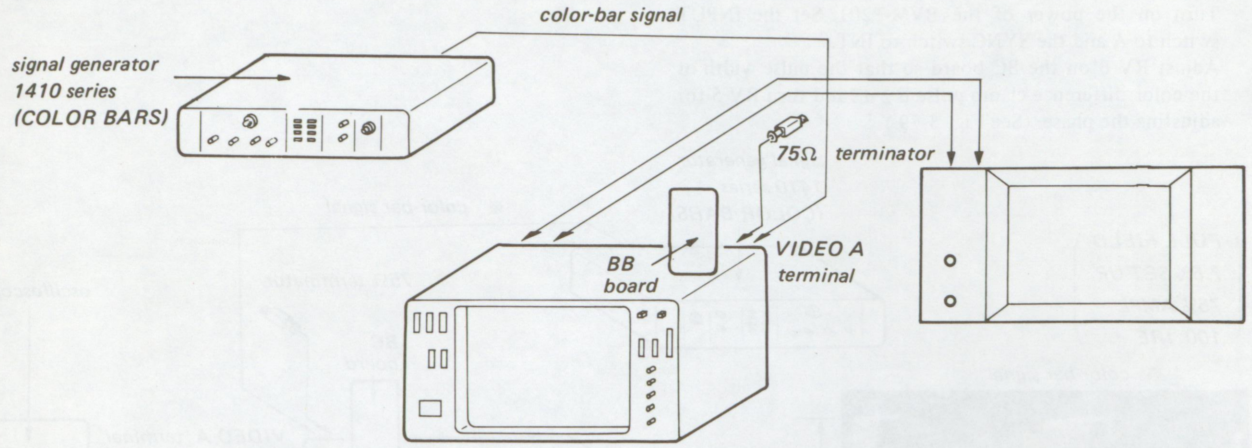


Fig. 5-73.

2. Connect the R-Y output to the Y terminal of the vector scope and the B-Y output to the X terminal.
3. Adjust the vector output with RV6 (R-Y) and RV7 (B-Y) on the BB board. (See Fig. 5-74.)

Fig. 5-74.

BA board

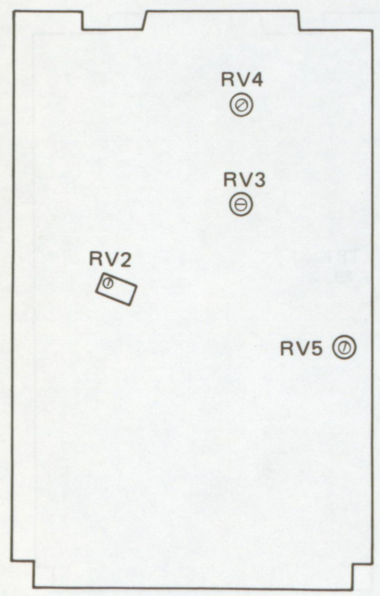


Fig. 5-75.

BB board

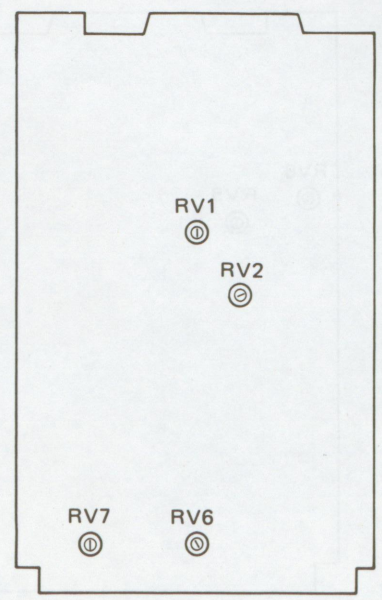


Fig. 5-76.

BC board

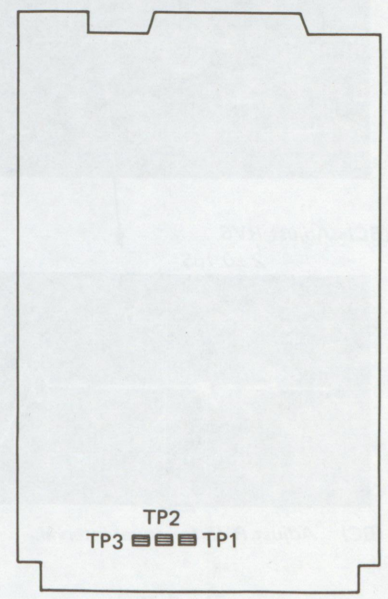


Fig. 5-77.

12. Color Difference Clamp Pulse Adjustment

1. Complete the connections as shown in Fig. 5-78.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Adjust RV 6 on the BC board so that the pulse width of the color difference clamp pulse is 2 μS and turn RV 5 for adjusting the phase. (See Fig. 5-79.)

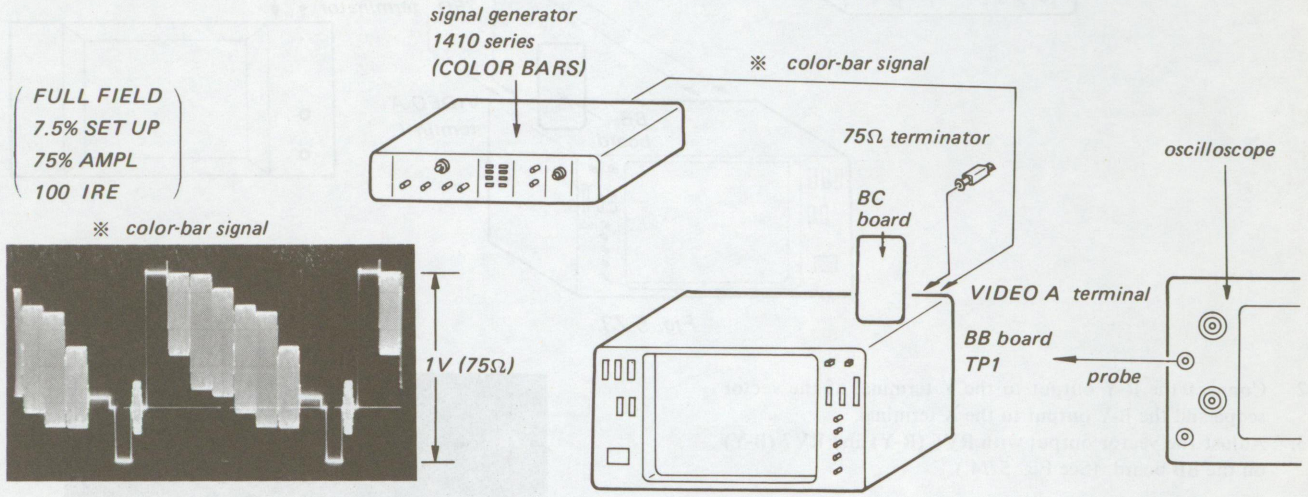


Fig. 5-78.

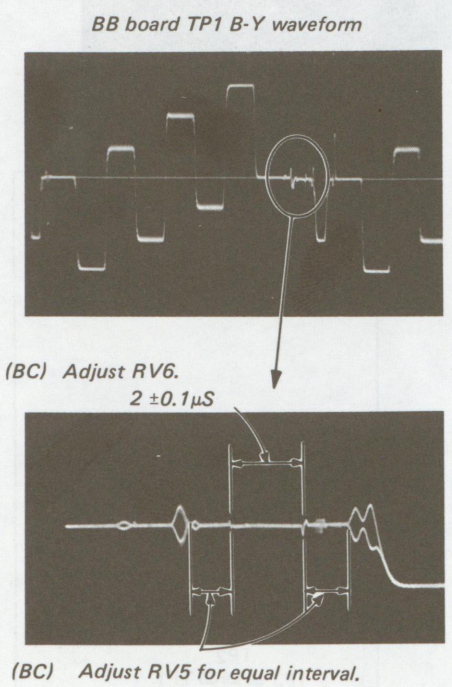


Fig. 5-79.

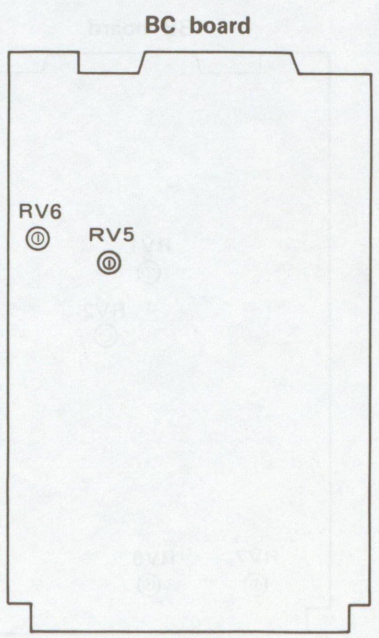


Fig. 5-80.

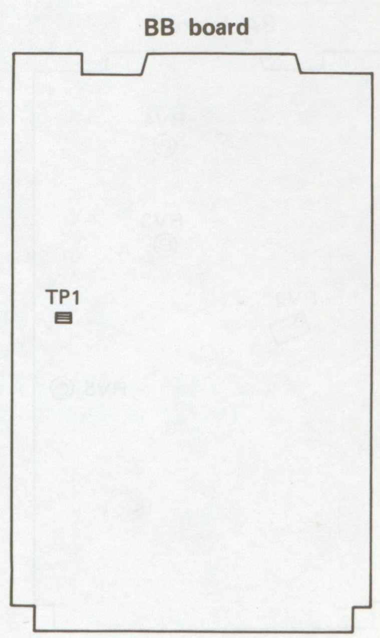


Fig. 5-81.

13. Bright and White Clamp Pulses Adjustment

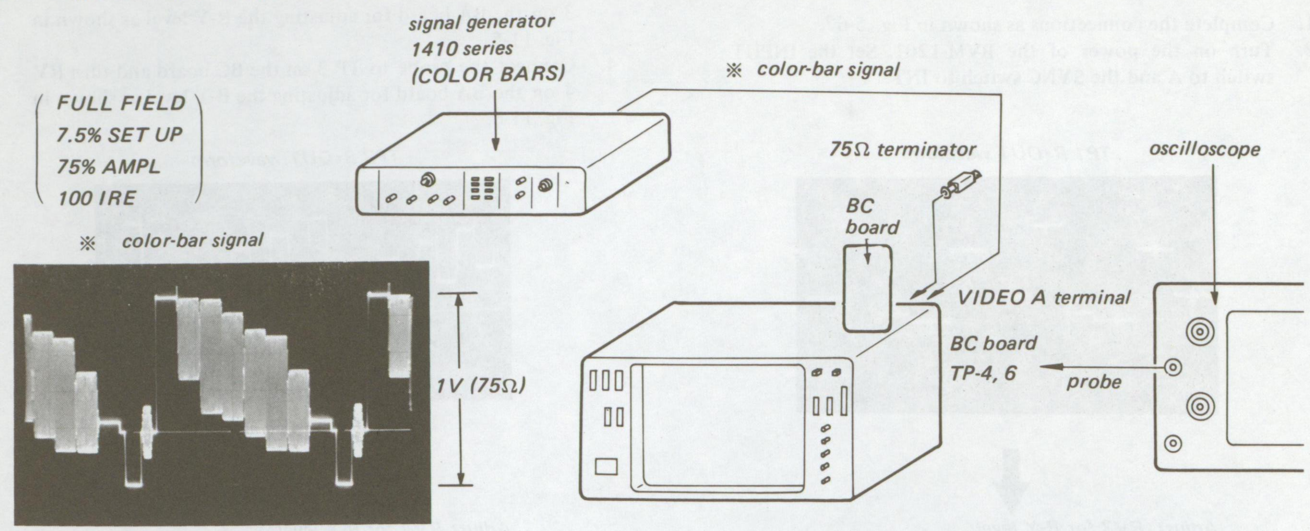


Fig. 5-82.

1. Complete the connections as shown in Fig. 5-82.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the probe to TP 4 on the BC board and adjust RV 3 for a BRT CLAMP PULSE width of 3.3 μS. Check that the pulse voltage is 7.5 ± 0.5 Vp-p. (See Fig. 5-83.)
4. Connect the probe to TP 6 on the BC board, adjust RV 4 for a WHITE CLAMP PULSE width of 3.3 μS, and check that the pulse voltage is 7.5 ± 0.5 Vp-p. (See Fig. 5-83.)

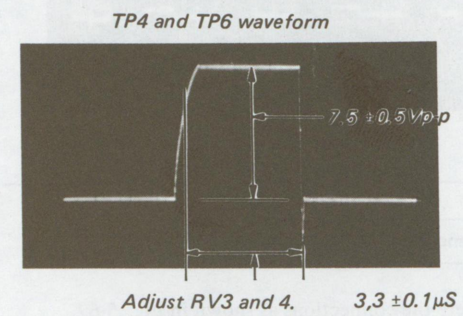


Fig. 5-83.

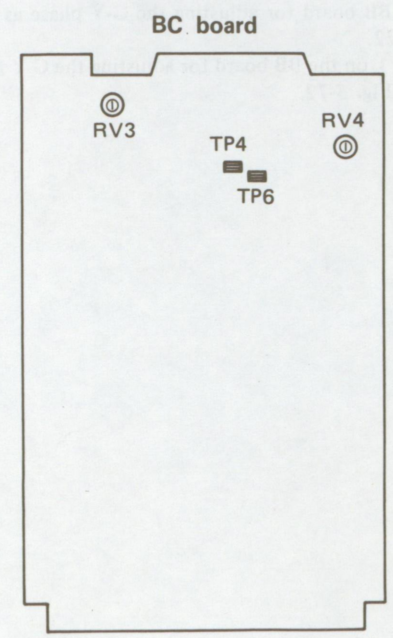
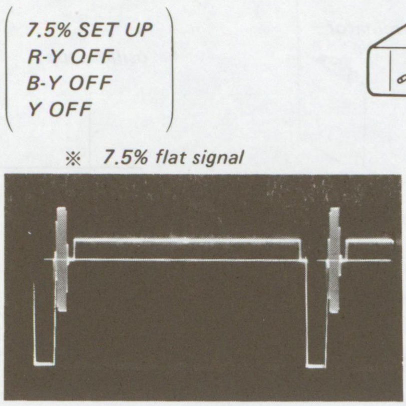


Fig. 5-84.

14. BC Board SETUP Adjustment



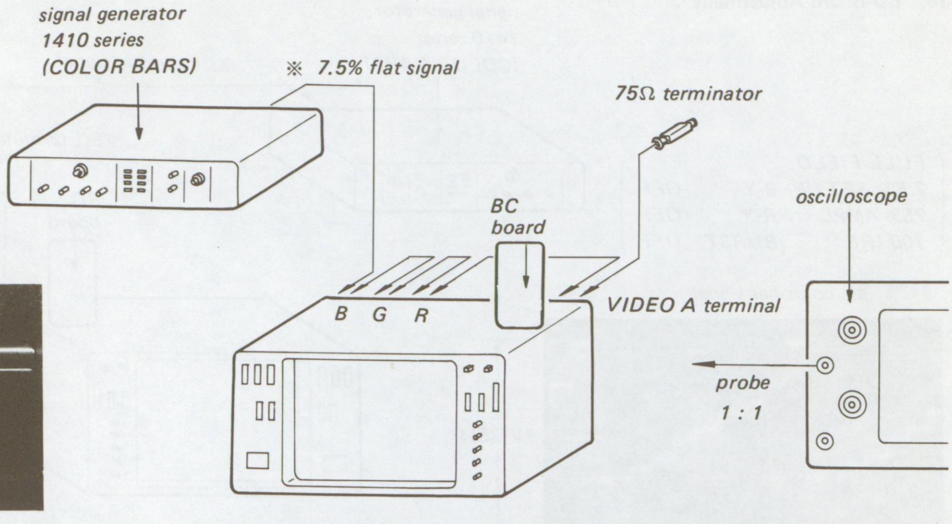


Fig. 5-85.

1. Complete the connections as shown in Fig. 5-85.
2. Turn on the power of the BVM-1201. Set the INPUT switch to RGB and the SYNC switch to INT.
3. Set the oscilloscope sensitivity to 5mV/DIV (with the 1:1 probe used), connect the probe to TP 1, TP 2, and TP 3 on the BC board in turn, and select the test point for the lowest 7.5% SETUP signal from the screening level.
4. Turn RV 2 on the BC board for adjusting the output from the test point selected in Step 3 as shown in Fig. 5-86.
5. Set the INPUT switch to A and the MODE switch to AUTO.
6. Adjust RV 1 on the BC board in the same procedures as in Steps 3 and 4.
7. Set the MODE switch to B/W and confirm that the SETUP level is within the specified value. (See Fig. 5-87.)

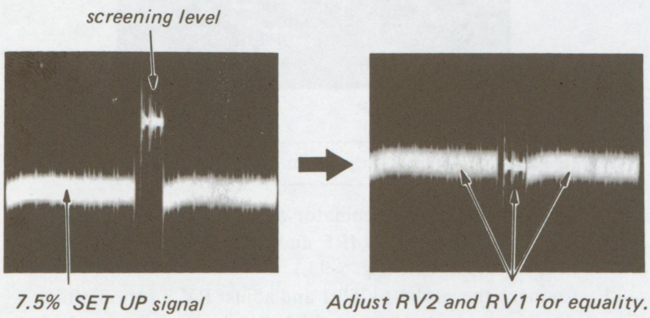
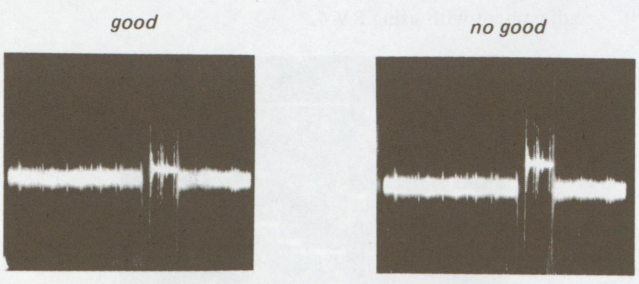


Fig. 5-86.



The screening signal should be on the 75% setup signal.

Fig. 5-87.

SUB BRIGHTNESS CONTROL Adjustment

8. Connect the probe to TP 8 on the BC board and set the oscilloscope sensitivity to 0.5V/DIV.
9. Set the oscilloscope sensitivity to 5mV/DIV.
10. Adjust the SUB BRIGHTNESS control so that the TP-8 waveform becomes flat. (See Fig. 5-88.)

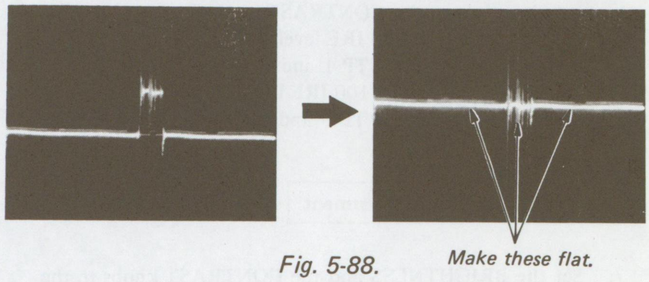


Fig. 5-88.

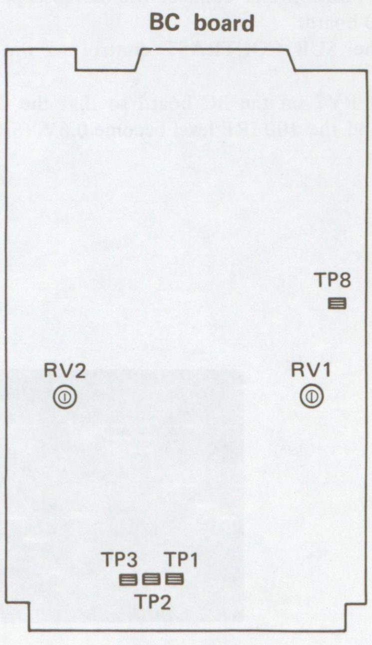
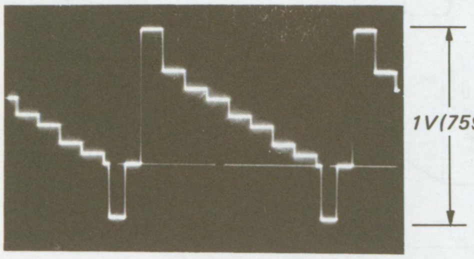


Fig. 5-89.

15. BD Board Adjustment

FULL FIELD
7.5% SET UP　B-Y　OFF
75% AMPL　R-Y　OFF
100 IRE　BURST　OFF

※ color-bar signal



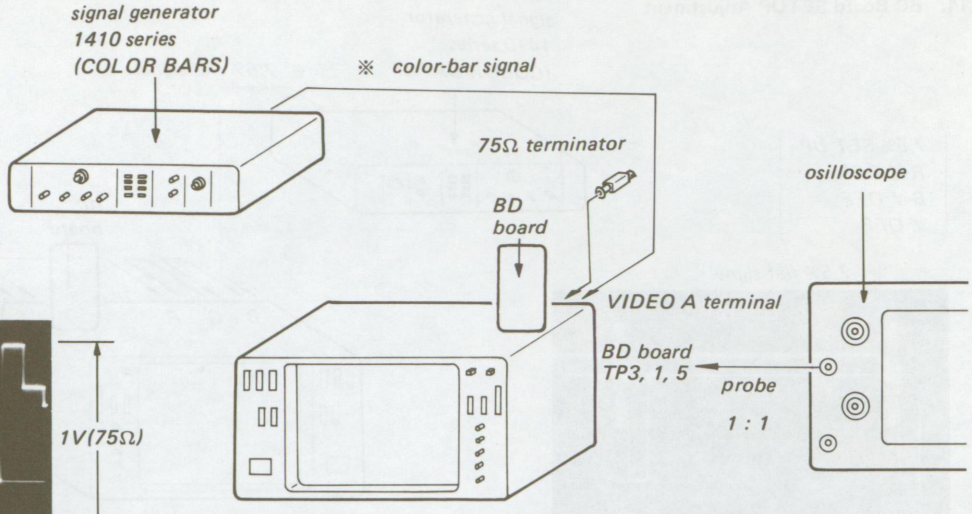


Fig. 5-90.

BRT PULSE LEVEL Adjustment

1. Complete the connections as shown in Fig. 5-90.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the probe (of 1:1) to TP 3 on the BD board and set the oscilloscope sensitivity to 10 mV/Div.
4. Set the BRIGHTNESS knob to MIN (before the detent point) and turn the CONTRAST knob for matching the BRT pulse and the 100 IRE level. (See Fig. 5-91.)
5. Connect the probe to TP 1 and turn RV 1 for matching the BRT pulse and the 100 IRE level.
6. Connect the probe to TP 5 and turn RV 2 for the same adjustment.

CONTRAST LEVEL Adjustment

7. Set the BRIGHTNESS and the CONTRAST knobs to the preset position and connect the oscilloscope to TP 3 on the BD board.
8. Set the SUB CONTRAST control to the mechanical center.
9. Adjust RV7 on the BC board so that the 7.5% SETUP level and the 100 IRE level become 0.6V. (See Fig. 5-92.)

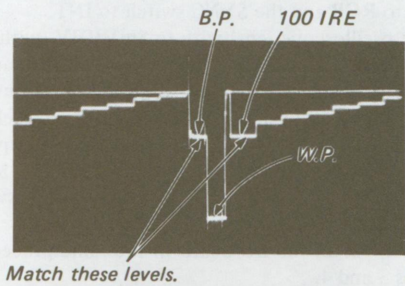


Fig. 5-91.

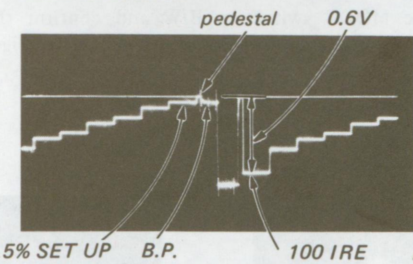


Fig. 5-92.

WHITE PEAK LIMITER Adjustment

10. Remove the 75 Ω terminator and turn the CONTRAST knob so that the 100 IRE and the following white level become equal. (See Fig. 5-93.)
11. Connect the probe to TP 1 and adjust RV 3 for obtaining the identical waveform (which can be superimposed on with the dual trace) with the one at TP 3.
12. Connect the proble to TP 5 and perform the same adjustment with using RV 4.

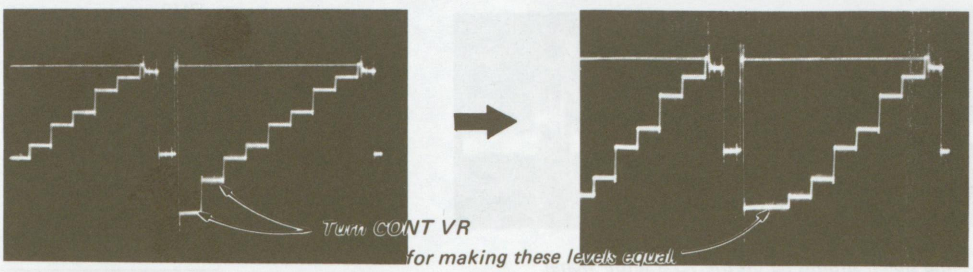


Fig. 5-93.

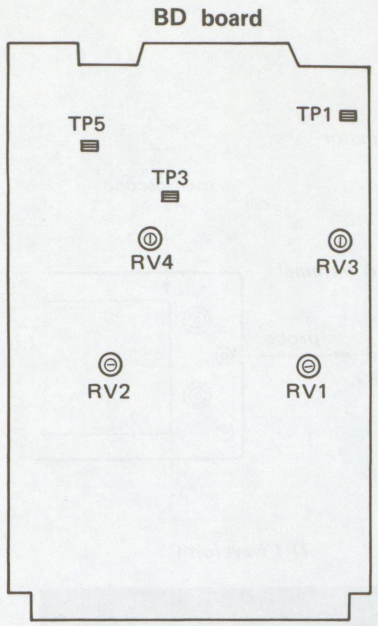


Fig. 5-94.

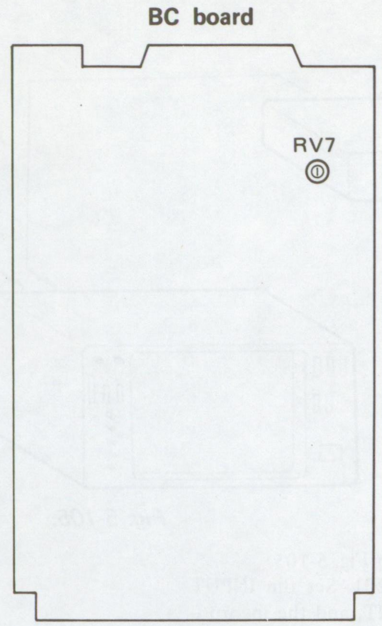


Fig. 5-95.

16. Over-all Friquency Adjustment

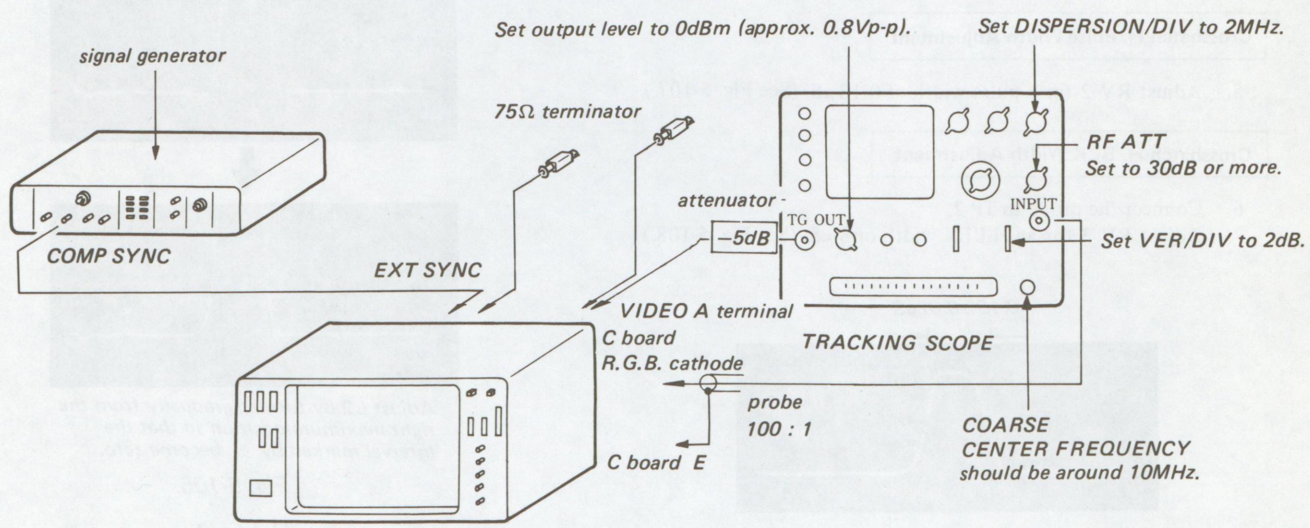


Fig. 5-96.

1. Complete the connections as shown in Fig. 5-96.
2. Connect the probe (of 100:1) to the through out of the 75 Ω terminator connected to the VIDEO A terminal of the BVM-1201. Check that the output waveform is flat in a range of 0 to 10MHz. (Probe correction)
3. Turn on the power of the BVM-1201. Set the INPUT switch to A, the SYNC switch to EXT, the EXT MODE switch to B/W, and the BRIGHTNESS knob to fully clockwise position.

4. Connect the probe to the R. cathode terminal of the picture tube socket on the C board (E should be connected to E of the C board) and adjust CV1 on the BE board so that the overall frequency characteristic of the R circuit becomes flat in a range of 0 to 7 MHz. (See Fig. 5-97.)
5. Connect the TG OUT and the 75 Ω terminator to R terminal and set the INPUT switch to RGB.
6. Adjust CV7 on the Q board so that the output waveform becomes flat in a range of 0 to 8 MHz. (See Fig. 5-98.)
7. Connect the TG OUT and the 75 Ω terminator to the VIDEO A terminal and set the INPUT switch to A.
8. Remove the probe to the G cathode terminal of the picture tube socket on the C board and turn CV2 on the BE board so that the overall frequency characteristic of the G circuit becomes flat in a range of 0 to 7 MHz. (See Fig. 5-97.)
9. Remove the TG OUT and the 75 Ω terminator to the G terminal and set the INPUT switch to RGB.
10. Adjust CV9 on the Q board so that the output waveform becomes flat in a range of 0 to 8MHz. (Fig. 5-98.)
11. Remove the TG OUT and the 75 Ω terminator to the VIDEO A terminal and set the INPUT switch to A.
12. Connect the probe to the B cathode terminal of the picture tube socket on the C board and adjust CV3 on the BE board so that the overall frequency characteristic of the B circuit becomes flat in a range of 0 to 7 MHz. (See Fig. 5-97.)
13. Remove the TG OUT and the 75 Ω terminator to the B terminal and set the INPUT switch to RGB.
14. Adjust CV11 on the Q board so that the output waveform becomes flat in a range of 0 to 8 MHz. (See Fig. 5-98.)

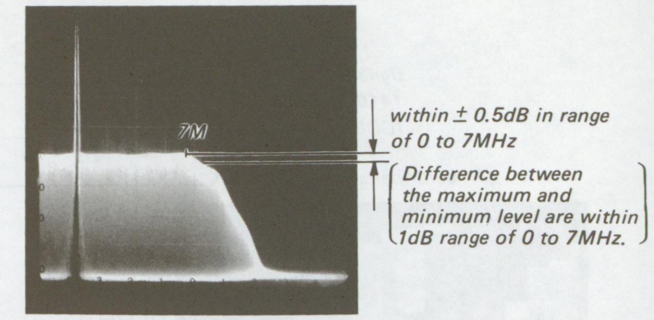


Fig. 5-97.

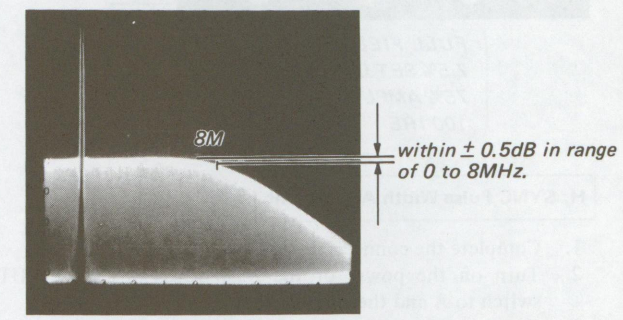


Fig. 5-98.

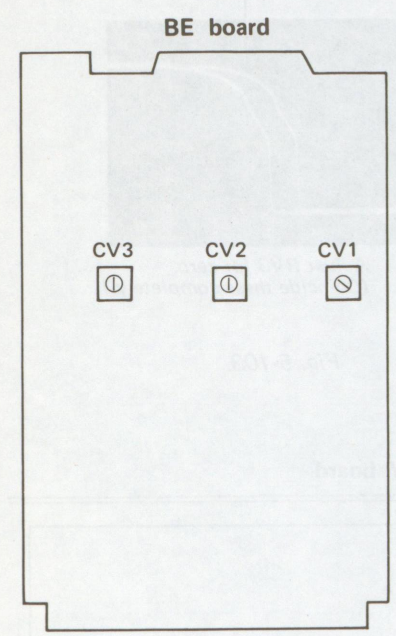


Fig. 5-99.

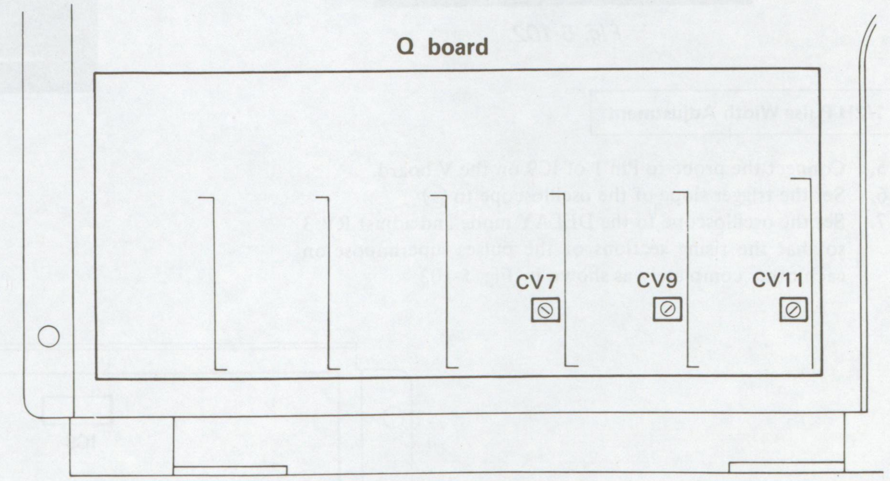
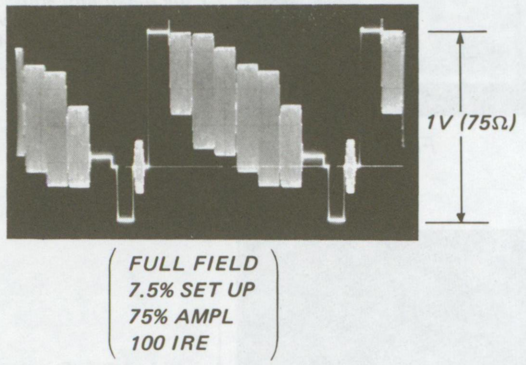


Fig. 5-100.

17. V Board Adjustment



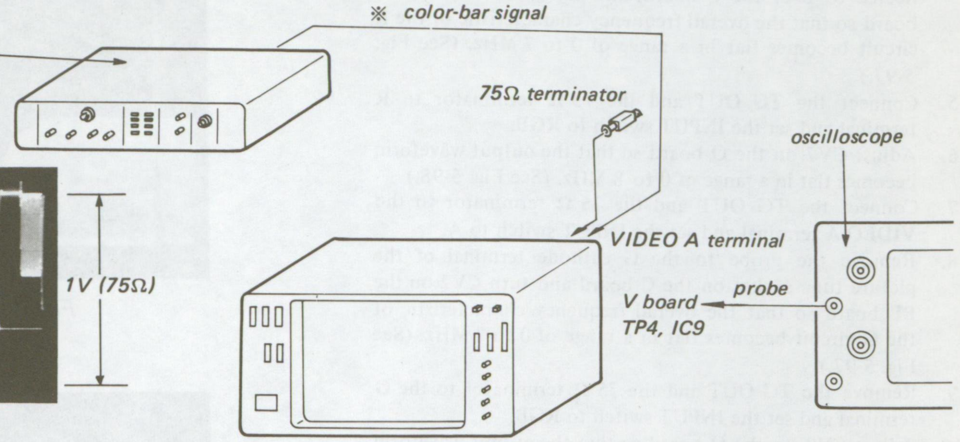


Fig. 5-101.

H. SYNC Pulse Width Adjustment

1. Complete the connections as shown in Fig. 5-101.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the oscilloscope probe to TP 4 board on the V board.
4. Adjust RV 2 for a pulse width of 6 µS. (See Fig. 5-102.)

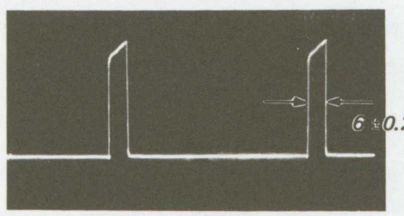
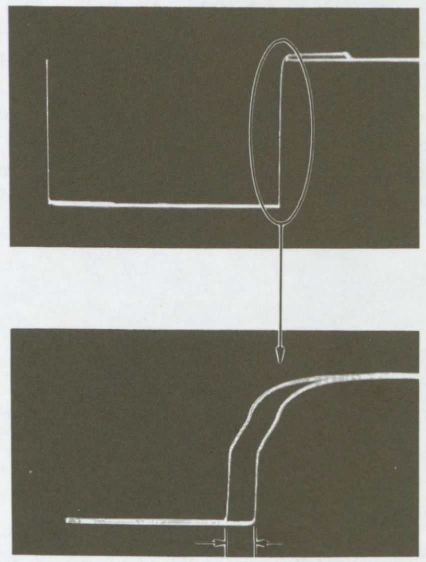


Fig. 5-102.

1/2H Pulse Width Adjustment

5. Connect the probe to Pin 1 of IC9 on the V board.
6. Set the trigger slope of the oscilloscope to ⊖.
7. Set the oscilloscope to the DELAY mode and adjust RV 3 so that the rising sections of the pulses superimpose on each other completely as shown in Fig. 5-103.



Adjust RV3 for zero.
(Coincide these completely.)

Fig. 5-103.

V board

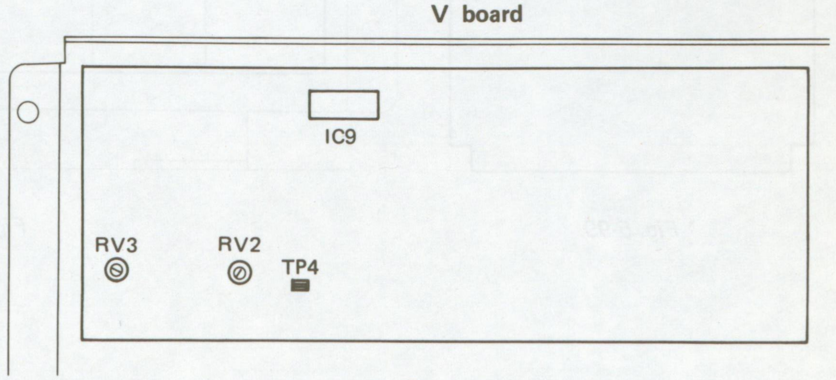


Fig. 5-104.

18. U Board Crosshatch Adjustment

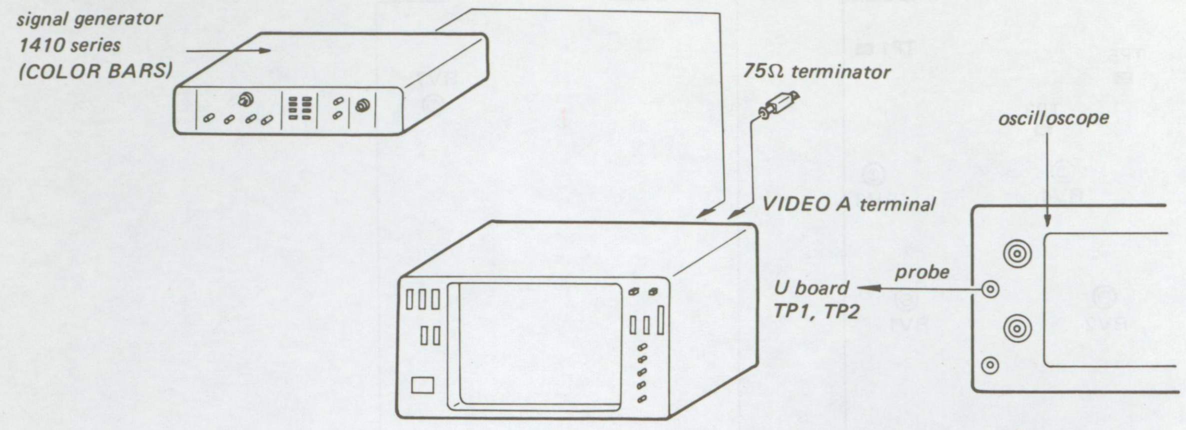


Fig. 5-105.

1. Complete the connections as shown in Fig. 5-105.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A, the SYNC switch to INT, and the incorporated CROSSHATCH switch to ON for receiving the crosshatch.

Crosshatch H. Pulse Waveform Shaping

3. Connect the oscilloscope probe to TP 1 on the U board.
4. Turn L2 fully clockwise, turn it gradually counterclockwise, and set it at the point where the falling hump of the pulse waveform vanishes. (See Fig. 5-106.)

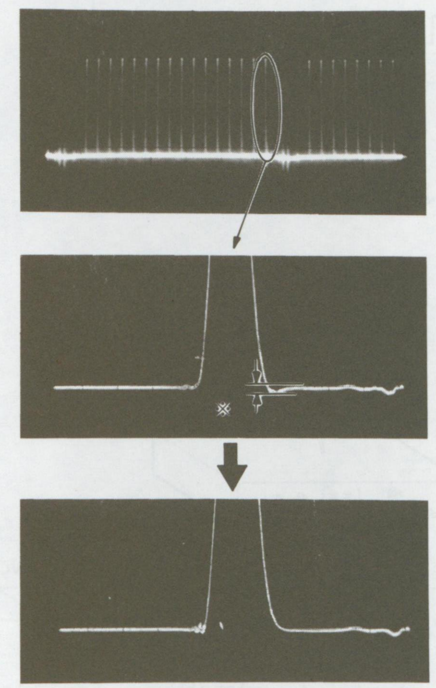
Crosshatch H. Pulse Width Adjustment

5. Adjust RV 2 for a pulse width of 0.18 µS. (See Fig. 5-107.)

Crosshatch H. BLK Width Adjustment

6. Connect the probe to TP 2.
7. Adjust RV 3 for an H.BLK width of 8 µS. (See Fig. 5-108.)

TP1 waveform



Adjust L2 by turning gradually from the right maximum position so that the interval marked by ※ become zero.

Fig. 5-106.

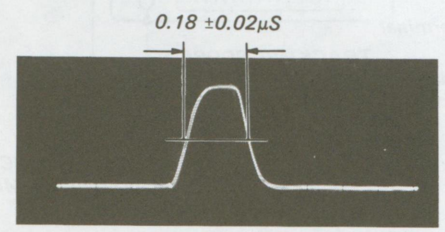


Fig. 5-107.

TP2 waveform

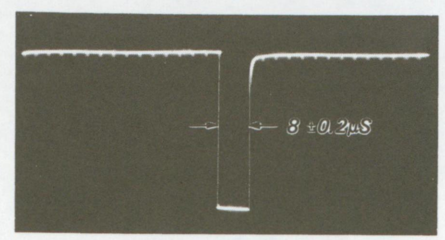


Fig. 5-108.

U board

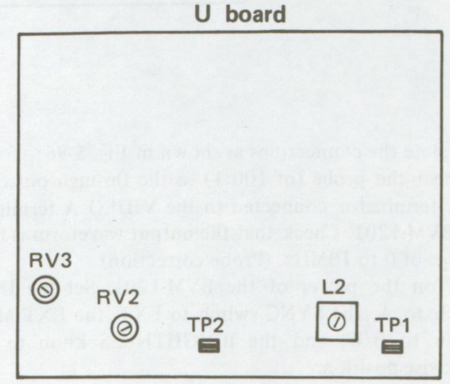


Fig. 5-109.

(2) Make the BVM-1201 receive a crosshatch signal from the signal generator and present only H. lines.
(3) Set up the UNDERSCAN mode.
(4) Make the BVM-1201 show 14 H. lines and adjust the VERTICAL POSITION of the signal generator so that the space between the effective face edge of the picture tube and the first line is equal to the one between the effective face and the last line. (See Fig. 5-116.)

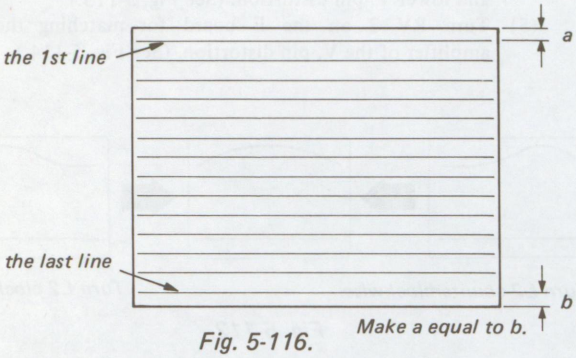


Fig. 5-116.

(5) Set up the NORMAL SCAN mode.
(6) Adjust RV 16 on the DA board so that the center of the 14 H, lines (between the 7th and 8th lines from the top or the bottom line) matches the mechanical center of the picture tube.
(7) Put the center of the linearity gauge on the mechanical center of the picture tube and perform the following adjustments while observing the gauge.
(8) Turn RV 15 on the DA board for matching the V. center.
(9) Adjust RV3 on the E board for matching the V. size.
(10) Turn RV 16 on the DA board for matching the S-letter tilt. (See Fig. 5-117.) (Make the upper and lower unbalanced portion of the S-letter correction symmetrical.)
(11) Turn RV 19 on the DA board for S-letter correction. (See Fig. 5-118.)
(12) Repeat Steps 8 to 11 for tracking.

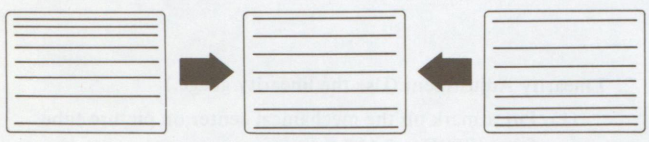


Fig. 5-117.

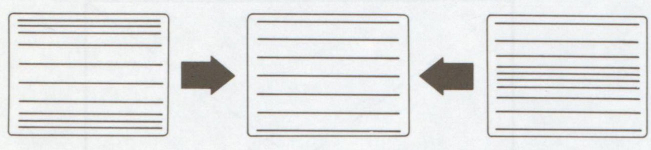


Fig. 5-118.

H. Linearity Adjustment **(Use the linearity gauge.)**

(1) Make the BVM-1201 receive the crosshatch signal and show only V. lines.
(2) Adjust RV 20 on the DA board for the H. pin distortion tilt. (See Fig. 5-119.)
(3) Adjust RV 23 on the DA board for the H. pin distortion. (See Fig. 5-120.)

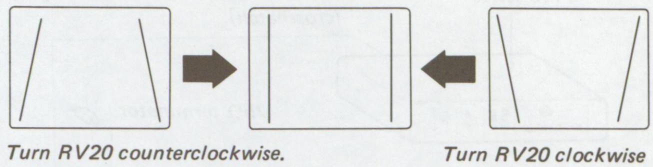


Fig. 5-119.

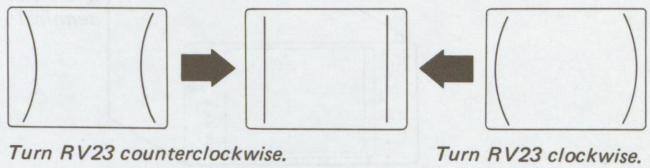


Fig. 5-120.

(4) Put a mark on the mechanical center of the picture tube. (See Fig. 5-115.)
(5) Set up the UNDERSCAN mode.
(6) Make the BVM-1201 show 17 V. lines. Adjust the HORIZONTAL POSITION of the signal generator so that the space between the effective picture edge of the picture tube and the first line is equal to the one between the edge and the 14th line. (See Fig. 5-121.)
(7) Adjust L6 (H. LIN) on the E board so that the center line of the 14 lines (9th line from the left or the right) comes on the mechanical center of the picture tube.
(8) Set up the NORMAL mode.
(9) Put the linearity center gauge on the mechanical center of the picture tube. Perform the following adjustments while watching the gauge.
(10) Turn RV4 on the E board for matching the H. center.
(11) Turn RV6 (H. SIZE) on the E board for matching the right side of the screen.
(12) Turn L6 (H. LIN) on the E board for matching the left side of the screen.
(13) Repeat Steps (2), (3), and (9) through (12) for tracking.

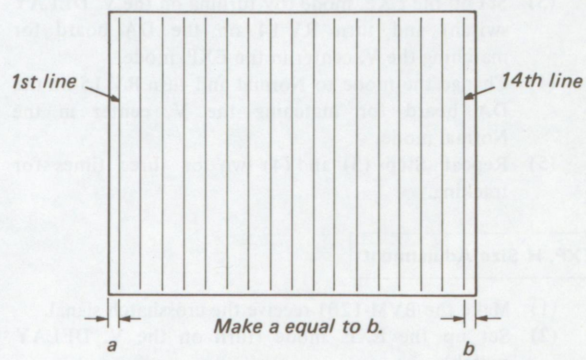


Fig. 5-121.

19. Linearity Adjustment

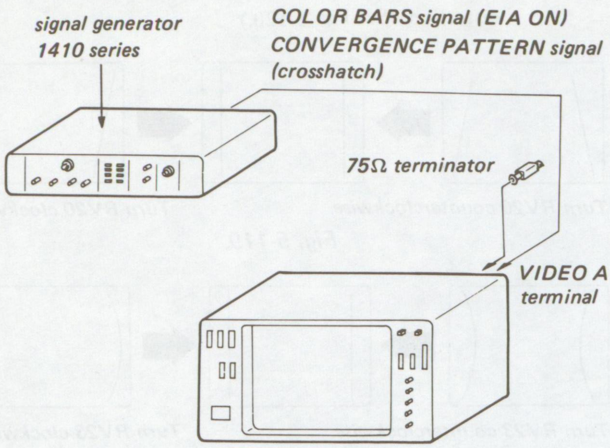


Fig. 5-110.

1. Complete the connections as shown in Fig. 5-110 and turn on the power of the BVM-1201.

V. Lamp Adjustment

(1) Connect the oscilloscope probe to TP 1 on the D (DA) board.
(2) Adjust RV 13 on the DA board so that the V. LAMP waveform is 12 Vp-p. (See Fig. 5-111.)

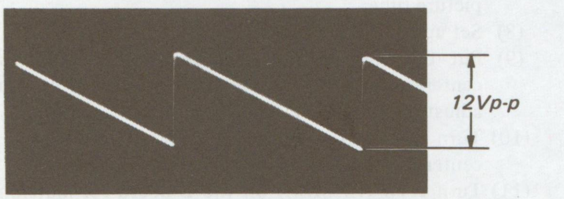


Fig. 5-111.

EXP. V. Center Adjustment **(Use the linearity gauge.)**

(1) Receive the crosshatch signal.
(2) Set RV 15 (V. Center) on the DA board to its mechnical center.
(3) Set up the EXP. mode (by turning on the V. DELAY switch) and turn RV 14 on the DA board for matching the V. center in the EXP. mode.
(4) Change the mode to Normal and turn RV 15 on the DA board for matching the V. center in the Normal mode.
(5) Repeat Steps (3) and (4) two or three times for tracking.

EXP. H Size Adjustment

(1) Make the BVM-1201 receive the crosshatch signal.
(2) Set up the EXP. mode (turn on the V. DELAY switch).
(3) Adjust RV27 on the DA board for the H size in the NORMAL mode.
(4) Set up the NORMAL mode and confirm the H size.
(5) Repeat Steps(2) to (4) two or three times for tracking.

V. Linearity Adjustment

1. V. Pin Distortion Adjustment
   (1) Make the BVM-1201 receive a CONV. pattern signal and present only the H. lines on the screen.
   (2) Turn RV 1 and RV 2 on the E board fully clockwise.
   (3) Turn L2 on the E board for matching of a V. pin distortion phase. (See Fig. 5-112.)
   (4) Turn RV 1 on the E board for balancing the upper and lower V. pin distortion. (See Fig. 5-113.)
   (5) Turn RV 2 on the E board for matching the amplifier of the V. pin distortion. (See Fig. 5-114.)

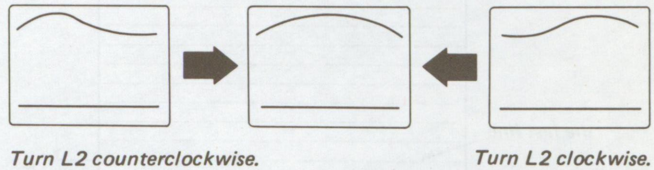


Fig. 5-112.

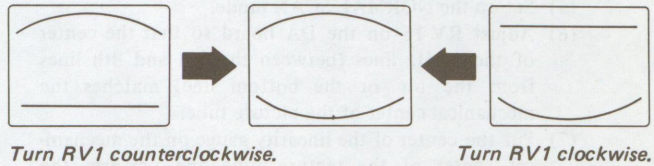


Fig. 5-113.

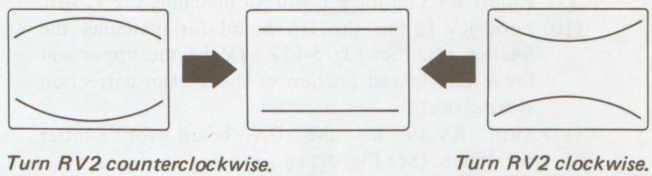


Fig. 5-114.

2. Linearity Adjustment (Use the linearity gauge.)
   (1) Put a mark on the mechanical center on picture tube face. (See Fig. 5-115.)

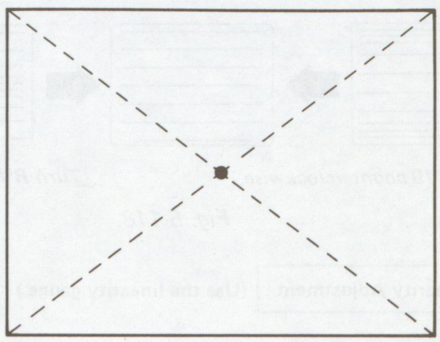
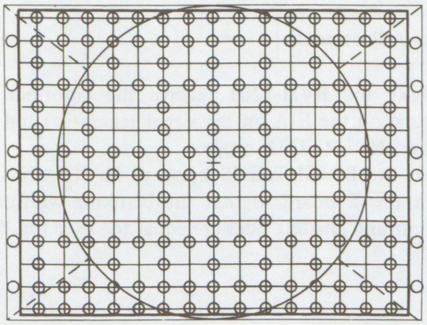


Fig. 5-115.

Note: For the linearity confirmation, gaze the linearity gauge in the manner that your eye is perpendicular to the gauge.



Screeen after V. and H. linearity adjustments.

Fig. 5-122.

UNDER SCAN Linearity Adjustment

(1) Make the BVM-1201 receive the crosshatch signal and set up the UNDER SCAN mode.
(2) Connect the digital voltmeter to the emitter of Q16 on the E board and adjust RV5 (U.S. H. SIZE) for a 81.0V dc reading.
(3) Turn RV 22 on the DA board for adjusting the H. pin distortion in the UNDER SCAN mode.
(4) Turn RV 18 on the DA board for adjusting the S-letter correction.
(5) Turn RV 12 on the DA board so that the V. SIZE in the UNDER SCAN mode is "3" for the H. SIZE "4".
(See Fig. 5-123.) (i.e., make the ratio of the H. SIZE and the V. SIZE 4:3.)
(6) Repeat Steps (3) to (5) for tracking.

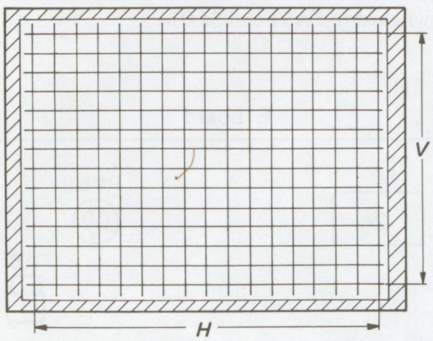


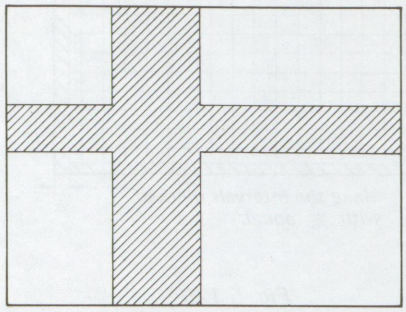
Fig. 5-123. *H:V = 4:3*

EXP. Linearity Adjustment

(1) Turn on the CROSSHATCH switch (S 4) on the DA board to make the BVM-1201 receive the incorporated crosshatch signal, and set up the EXP. mode (turn on the V. DELAY switch).
(2) Set RV 17 (EXP. S-LETTER) on the DA board to the mechanical center.
(3) Turn RV 21 on the DA board for adjusting the H. pin distortion in the EXP mode.

H. FREQ. Adjustment

(1) Make the BVM-1201 receive the crosshatch signal and set the SYNC switch to EXT. (The picture flows.)
(2) Adjust RV 24 on the DA board so that the picture becomes stationary or moves slowly. (See Fig. 5-124.)



Make picture stop or move slowly.

Fig. 5-124.

H. SYNC Pulse Width Adjustment

(1) Make the BVM-1201 receive the crosshatch signal.
(2) Connect the oscilloscope to TP 5 on the DA board. Adjust RV 26 on the DA board so that the H. SYNC pulse width becomes 5μS. (See Fig. 5-125.)

D board TP5 waveform

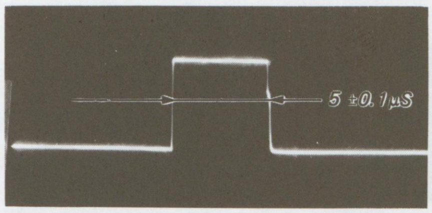


Fig. 5-125.

Picture Phase Adjustment

(1) Turn RV10 on the E board fully counterclockwise.
(2) Make the BVM-1201 receive the crosshatch signal, set up the UNDER SCAN mode, and set the BRIGHTNESS knob to MAX.
(3) Adjust RV25 on the DA board so that the outside raster portions of the picture become equal to at the right and the left sides. (See Fig. 5-126.)
(4) Set up the NORMAL SCAN and readjust the H. CENTER (with using RV4 on the E board).

Note: Since the picture phase is varied by the H. FREQ., H. SIZE, and H. BLK Pulse width, the H. FREQ., H. SIZE, and H. BLK pulse width should be readjusted after the picture phase adjustment when these are varied.

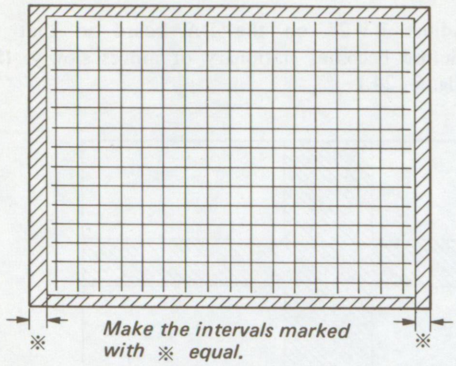


Fig. 5-126.

H. BLK Pulse Width Adjustment

(1) Make the BVM-1201 receive the crosshatch signal and set up the UNDER SCAN mode.
(2) Connect the oscilloscope probe to TP5 on the E board (its earth to TP6) and turn RV10 for adjusting the H. BLK pulse width. (See Fig. 5-127.)

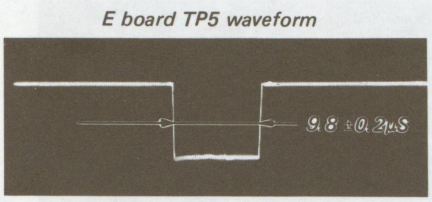


Fig. 5-127.

Note: Since the H. BLK pulse width is changed by the H. SIZE, the H. SIZE should be readjusted after the H. BLK pulse width adjustment when the H. SIZE is changed.

H. BLK Phase Adjustment

(1) Make the BVM-1201 receive the color-bar signal (turn on the EIA on the signal generator) and set up the UNDER SCAN mode.
(2) Set the BRIGHTNESS knob to MAX. Adjust RV7 on the E board so that the blanking width at the right and the left sides are equal to. (See Fig. 5-128.)

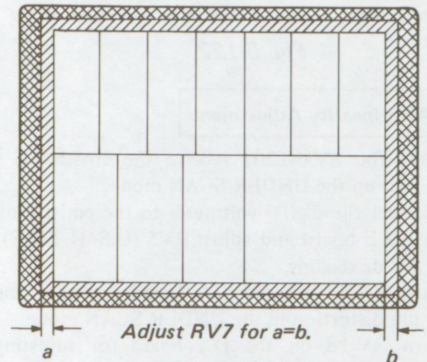


Fig. 5-128.

AFC SLOW FAST Position Adjustment

(1) Make the BVM-1201 receive the crosshatch signal.
(2) Adjust RV28 on the DA board so that the picture position does not vary when the AFC switch is switched to FAST and SLOW.

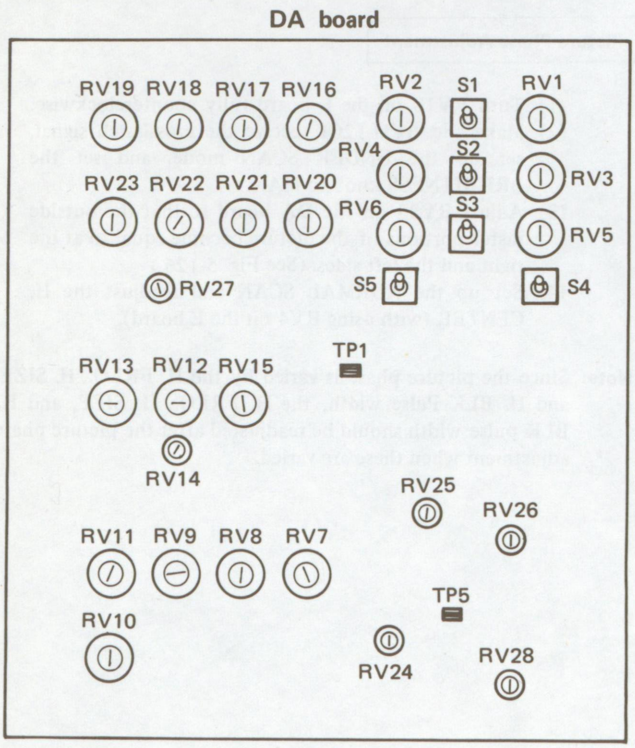


Fig. 5-129.

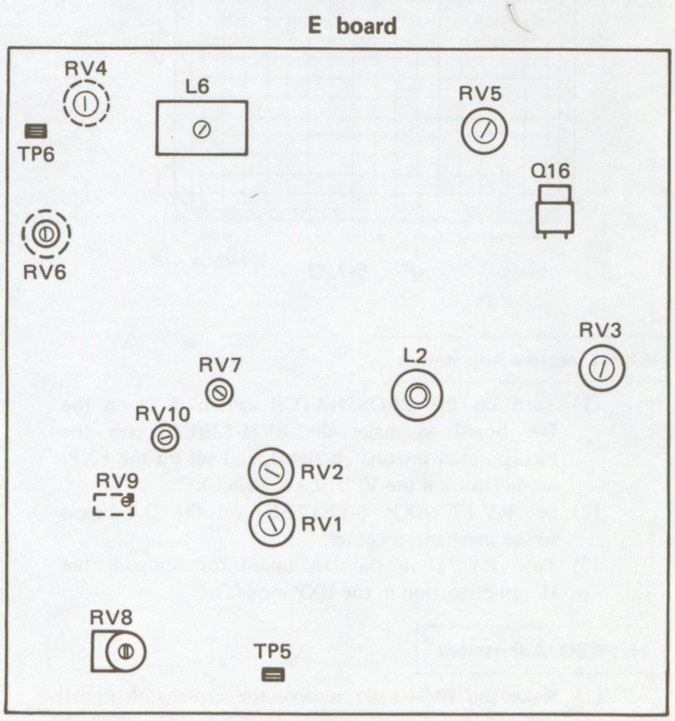
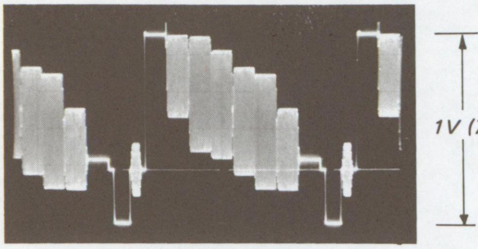


Fig. 5-130.

20. H DELAY Position Adjustment

※ color-bar signal



FULL FIELD
7.5% SET UP
7.5% AMPL
100 IRE

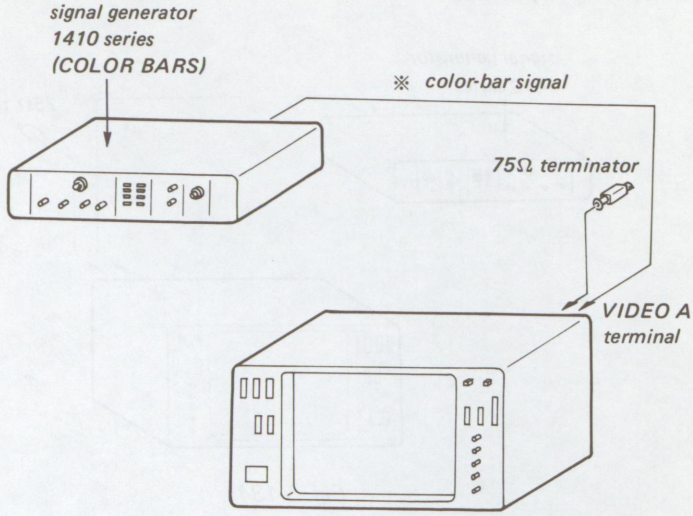


Fig. 5-131.

H. DELAY Position Adjustment

1. Complete the connections as shown in Fig. 5-131.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A and the SYNC switch to INT.
3. Turn RV 1 on the V board in the H. DELAY and V. DELAY operations so that the H. DELAY position is as shown in Fig. 5-132.

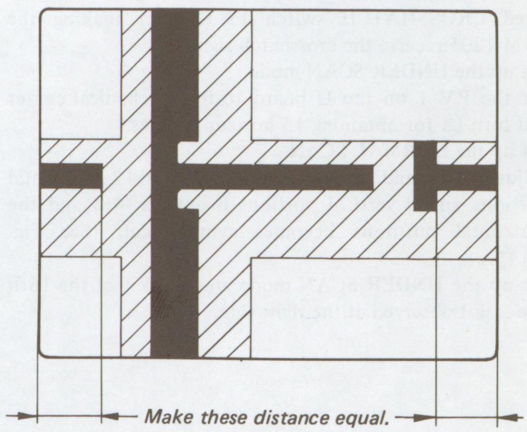


Fig. 5-132.

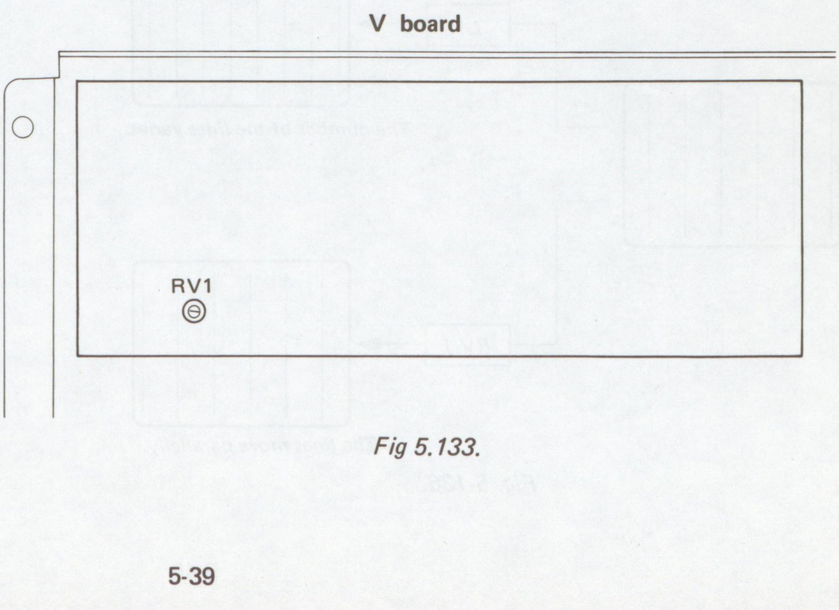


Fig 5.133.

21. Crosshatch Adjustment

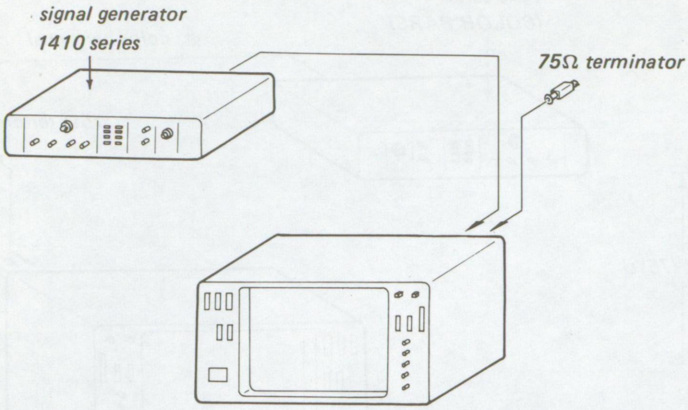


Fig. 5-134.

1. Complete the connections as shown in Fig. 5-134.
2. Turn on the power of the BVM-1201. Set the INPUT switch to A, the SYNC switch to INT, and the incorporated CROSSHATCH switch to ON for making the BVM-1201 receive the crosshatch signal.
3. Set up the UNDER SCAN mode.
4. Set the RV 1 on the U board to the mechanical center and turn L1 for obtaining 15 horizontal lines.
5. Set up the NORMAL SCAN.
6. Adjust RV 1 and L1 so that the ratio of 12 horizontal portions and 9 vertical portions is approx. 4:3 and the horizontal positions becomes symmetrical. (See Fig. 5-135.)
7. Set up the UNDER SCAN mode and check that the 16th line is not observed at the right side.

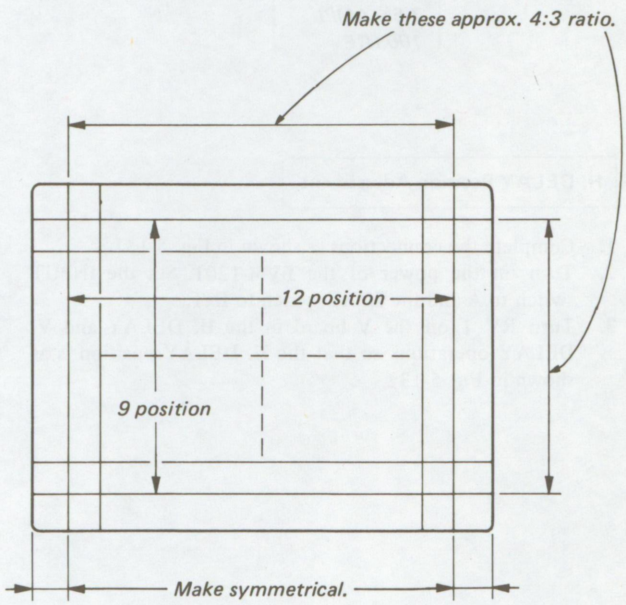


Fig. 5-135.

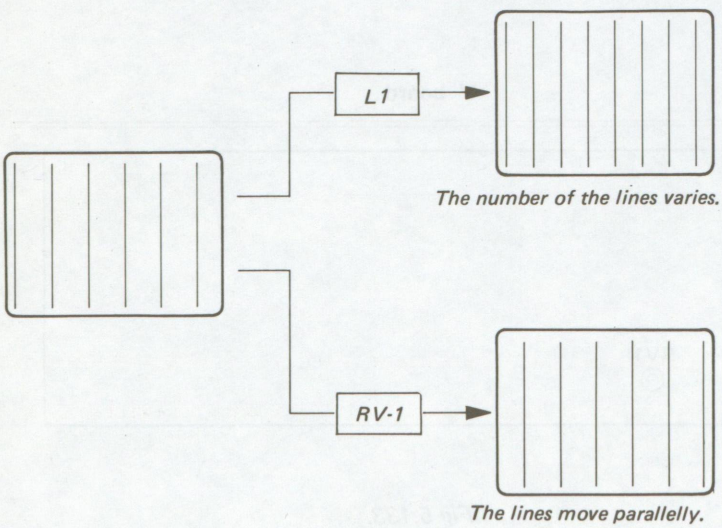


Fig. 5-136.

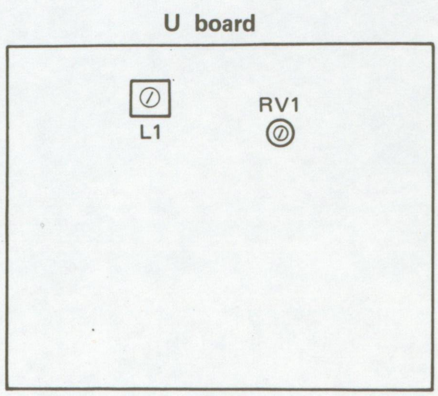


Fig. 5-137.

SECTION 6
DIAGRAMS

6-1. MOUNTING AND SCHEMATIC DIAGRAMS

Note: (for schematic diagrams)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω; MΩ : 1000 kΩ
- : nonflammable resistor.
- △ : internal component.
- ⏚ : direct connection to points marked ⏚ on the chassis
- ▭ : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ◪ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ◪ and repeat the adjustment until the specified value is achieved.
(Refer to R40 and R41 adjustment on page 5-9 and R69 adjustment on page 5-5).
When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment
R43, R44, R53, R54, R58, R59, R69, R70, RV3 and IC3 on G board	R69 Adjustment on page 5-5
R13, R18, R23, R24, R40, R41 and RV1 on P board HV block	R40 and R41 Adjustment on page 5-9

- When replacing the part in blow table, be sure to perform the related adjustment or check.

Part replaced	Adjustment or Check
D14 on P board	R40 and R41 Adjustment on page 5-9
D10, D11, D12, D13, Q6, R17, R18 and R73 on G board	Operation Check of +90 V Protector on page 5-7

- Voltages are dc with respect to ground unless otherwise noted.
- Reading are taken with a 20,000-ohm-per-volt VOM.
- ▭: adjustment for repair.
- ——— : B+ bus.
- – – –: B– bus.
- Readings and waveforms are taken with a color-bar signal input.
- Switches and controls are set as follows unless otherwise noted.

INPUT switch .... A
SYNC switch .... INT
MODE switch .... AUTO
UNDER SCAN switch .... OFF
DELAY-V switch .... OFF
DELAY-H switch .... OFF
BLUE ONLY switch .... OFF
AFC switch .... FAST

HUE control
CHROMA control
BRIGHTNESS control
CONTRAST control
APERTURE control
} PRESET position (fully counterclock-wise locked position)

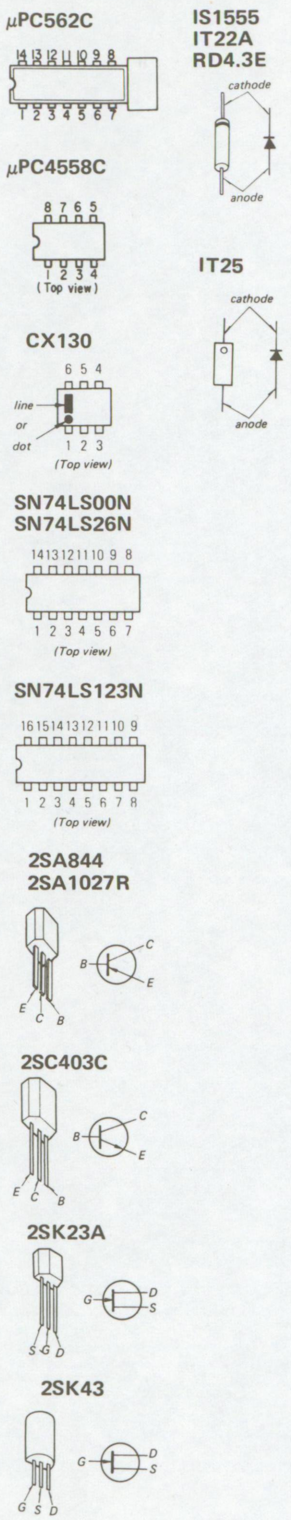
- ※ : selected to yield optimum performance.

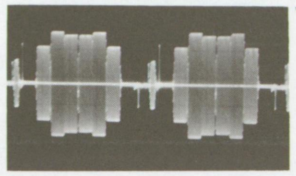
Note: (for mounting diagrams)

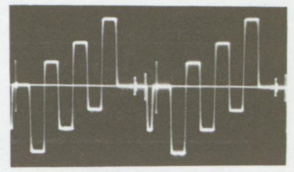
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ⊗ : Through hole.
- ▬ : Conductor side pattern
- ▬ : Component side pattern

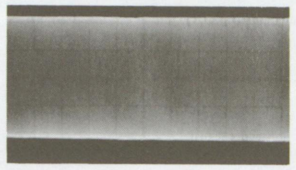
BA

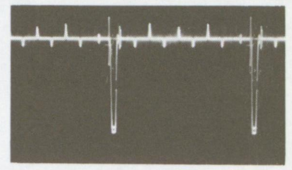
BA BOARD

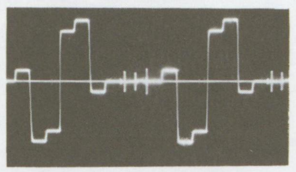


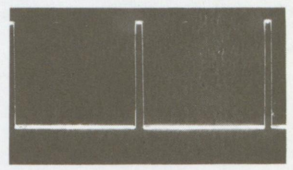

⑪ 0.2 Vp-p (H)

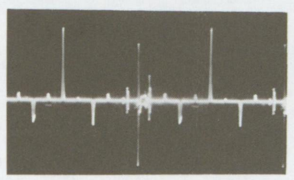

⑰ 0.72 Vp-p (H)

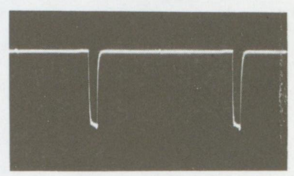

⑫ 0.44 Vp-p (H)
⑮ 1.7 Vp-p (H)
⑯ 0.46 V p-p (H)


⑱ 2.1 Vp-p (H)


⑬ 0.9 Vp-p (H)


⑲ 11 Vp-p (H)


⑭ 1.5 Vp-p (H)


⑳ 5.6 Vp-p (H)

– BA Board –

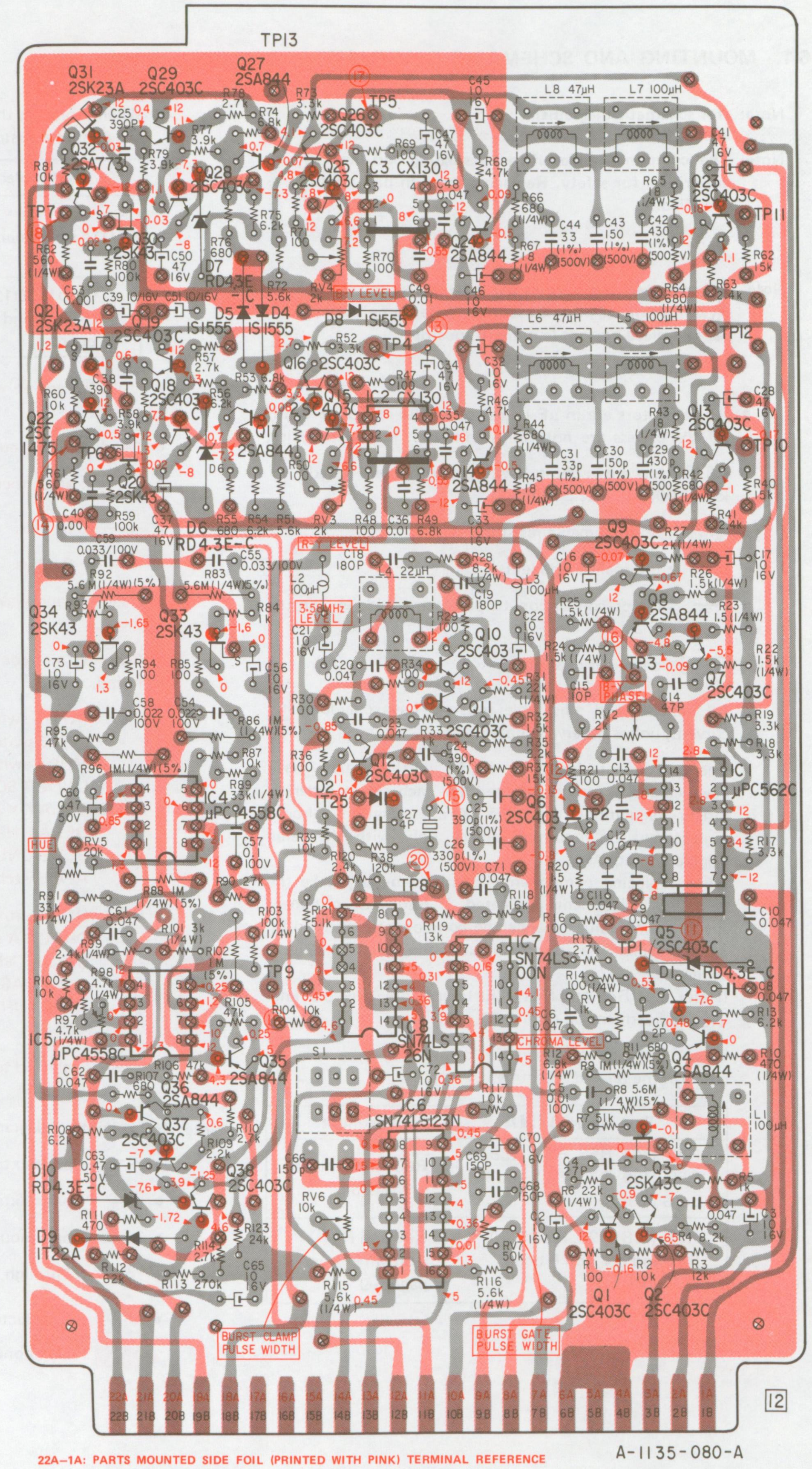
Note: • Reference numbers on the BA board are of the 1000 series. (i.e., R1:R1001, C1:C1001, etc.)

• See page 6-1 for other notes.

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL 1/4W CARBON RESISTOR'S TOLENANCE ARE ±1% UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN THE PARTS LIST ARE CODED FROM 1001.

IC	Q	D	ADJ
	31 29		L8,L7
	26		
	27		
	32		
3	28 25		
	30 24,23	7	
			RV4
		5,4,8	
	21		
	19		L6,
	16		
	22 17		
2	18,15	6	
	20 14,13		
			RV3
	9		
			L4
	8 7		
	34,33		
	10		
	11		
			RV2
	12		
		2	
4 1	6		
			RV
		1	
8			
	5		
5 7			RV1
	4		
	35		
	36		
			L1
	3		
	37		
	38	10	
6	1,2		RV6
		9	RV7

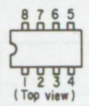
| IC | Q | D | ADJ |



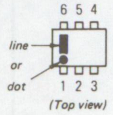
22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GARAY) TERMINAL REFERENCE

BB BOARD

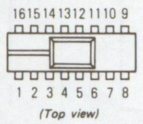
μPC4558C



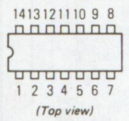
CX130



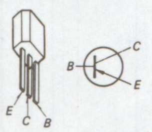
CX718D



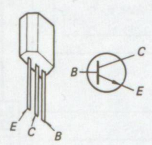
SN74LS26N
TA7158P



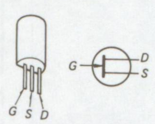
2SA844
2SA1027R



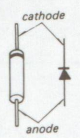
2SC403C

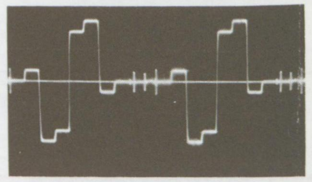


2SK43

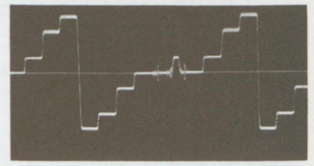


IS1555
RD4.3E
RD5.1E
RD6.2E
RD8.2E

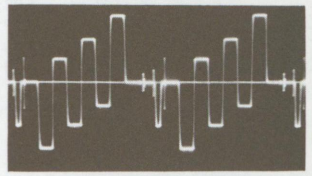




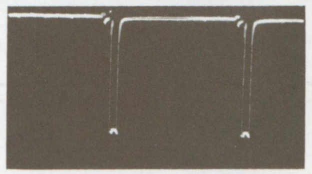
㉑ 1.5 Vp-p (H)



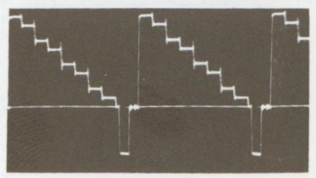
㉒ 0.84 Vp-p (H)



㉓ 1.8 Vp-p (H)



㉔ 4.5 Vp-p (H)



㉕ ㉖ } 0.76 Vp-p (H)
㉗ 1.8 Vp-p (H)

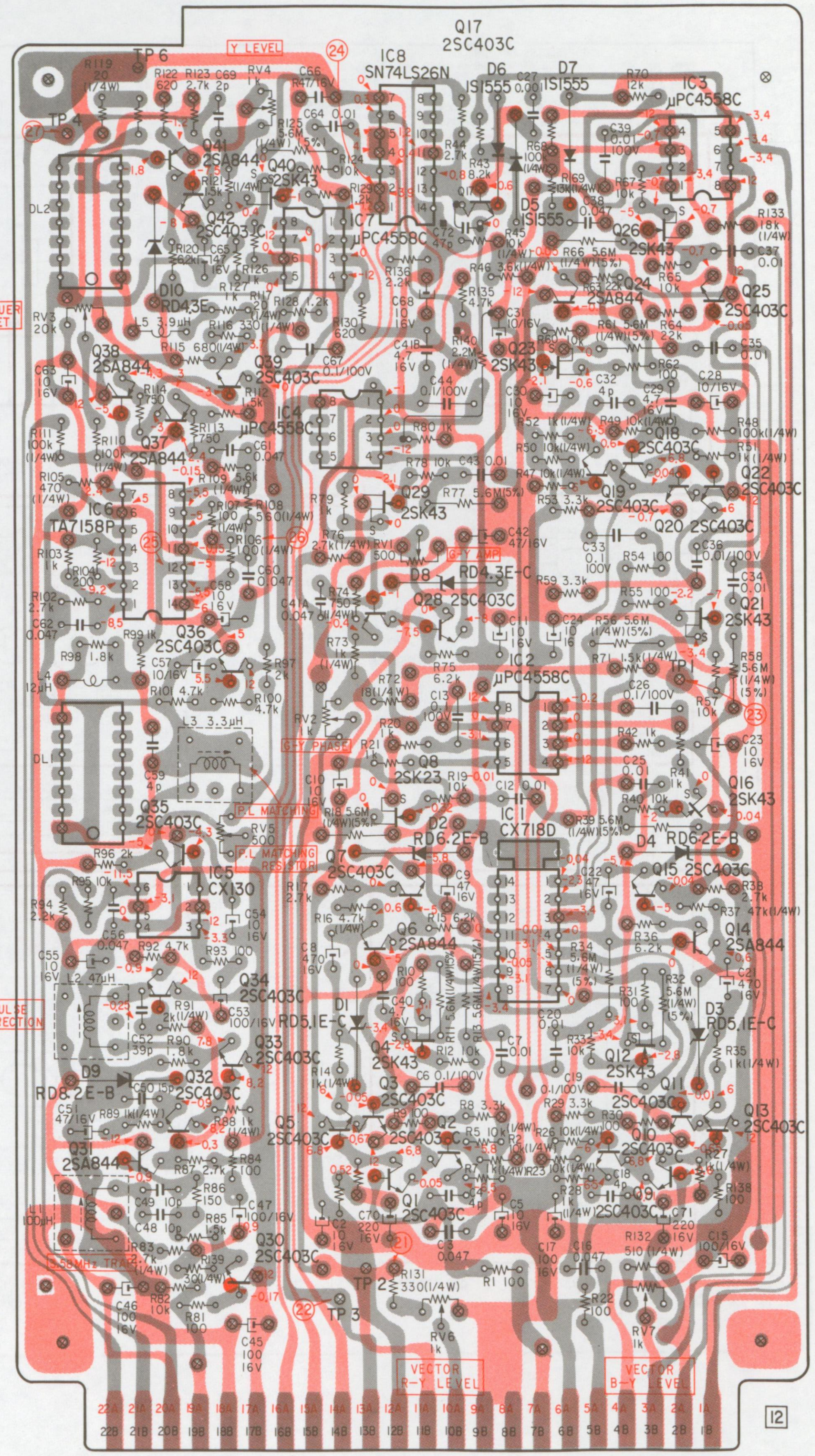
Note:
- Reference numbers on the BB board are of the 2000 series. (i.e., R1:R2001, C1:C2001, etc.)
- See page 6-1 for other notes.

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL 1/4W CARBON RESISTOR'S TOLENANCE ARE ±1% UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN THE PARTS LIST ARE CODED FROM 2001.

IC	Q	D	ADJ
			RV4
8 3	41 40 17 42 26	6 5 7	
7		10	
	24 25		RV3
	23 39 38 37		
4			
	19 18 29 20,22		
6		8	RV1
	27,28,21 36		
2	IC2		RV2 L3
	16 8 35	2 4	RV5
	7 15		
5 1			
	6 14		
	34	1 3	L2
	4 12 33		
		9	
	32,5,3 11,13		
	31 2 10 1 9		
			L1
	30		
			RV6,7
IC	Q	D	ADJ

APEATURE PRESET

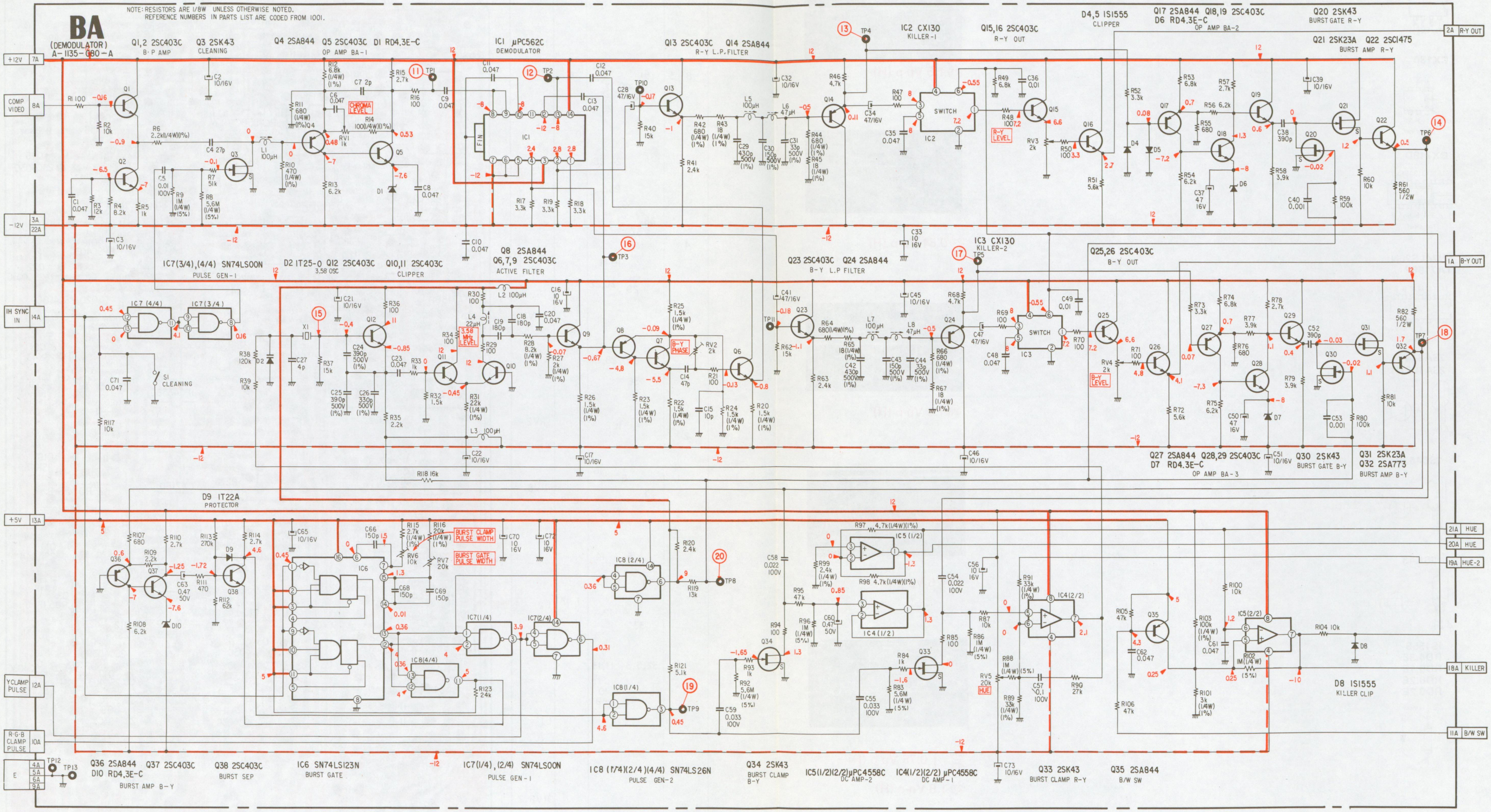
21 PULSE CORRECTION



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GARAY) TERMINAL REFERENCE

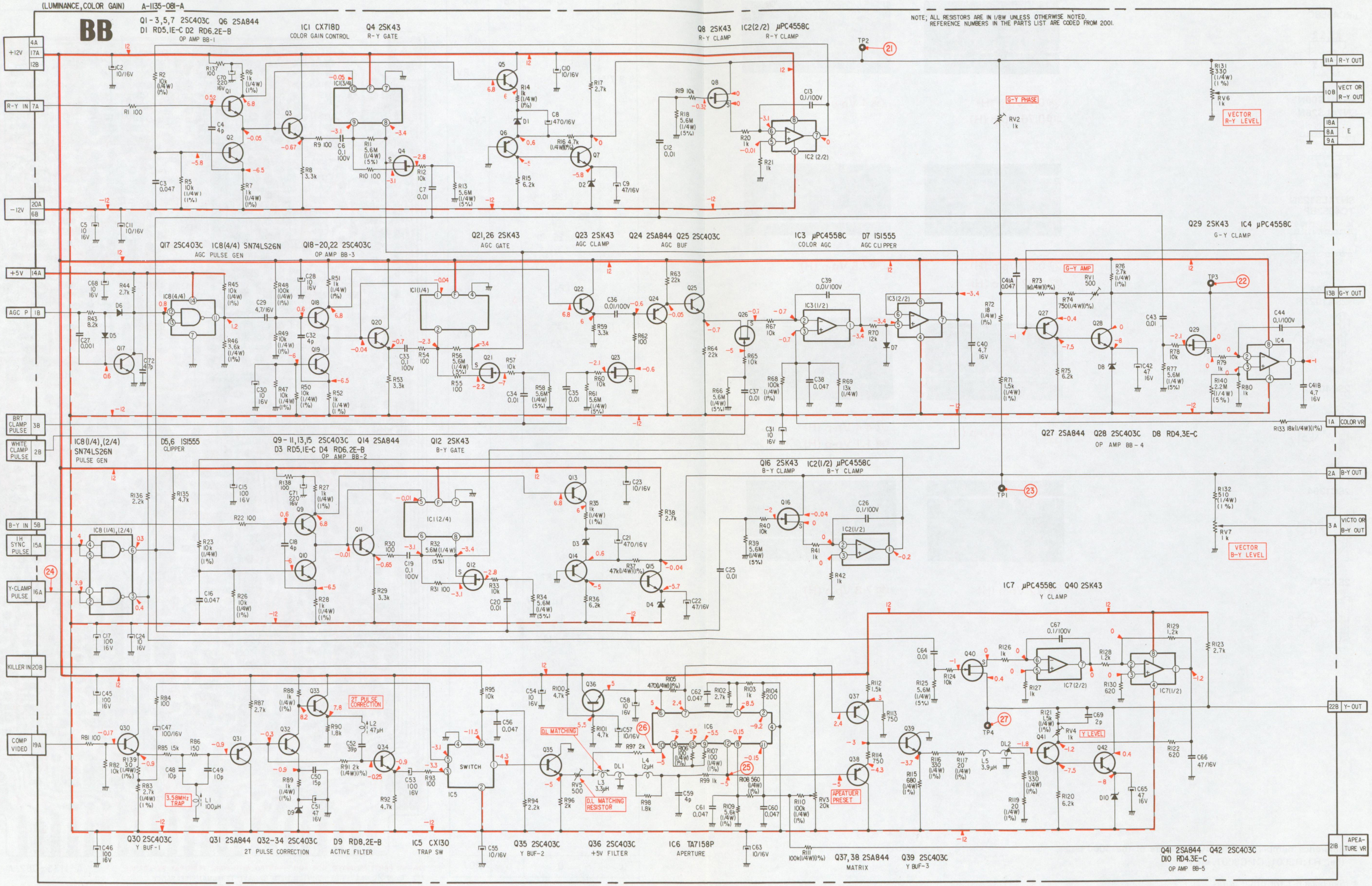
A-1135-081-A

BA BOARD



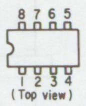
NOTE: RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 1001.
BA
(DEMODULATOR)
A-1135-680-A
Q1,2 2SC403C B·P AMP
Q3 2SK43 CLEANING
Q4 2SA844 Q5 2SC403C D1 RD4.3E-C OP AMP BA-1
IC1 μPC562C DEMODULATOR
Q13 2SC403C Q14 2SA844 R-Y L.P. FILTER
IC2 CX130 KILLER-1
Q15,16 2SC403C R-Y OUT
D4,5 1S1555 CLIPPER
Q17 2SA844 Q18,19 2SC403C D6 RD4.3E-C OP AMP BA-2
Q20 2SK43 BURST GATE R-Y
Q21 2SK23A Q22 2SC1475 BURST AMP R-Y
IC7(3/4),(4/4) SN74LS00N PULSE GEN-1
D2 1T25-0 Q12 2SC403C 3.58 OSC
Q10,11 2SC403C CLIPPER
Q8 2SA844 Q6,7,9 2SC403C ACTIVE FILTER
Q23 2SC403C Q24 2SA844 B-Y L.P FILTER
IC3 CX130 KILLER-2
Q25,26 2SC403C B-Y OUT
Q27 2SA844 Q28,29 2SC403C D7 RD4.3E-C OP AMP BA-3
Q30 2SK43 BURST GATE B-Y
Q31 2SK23A Q32 2SA773 BURST AMP B-Y
D9 1T22A PROTECTOR
Q36 2SA844 Q37 2SC403C D10 RD4.3E-C BURST AMP B-Y
Q38 2SC403C BURST SEP
IC6 SN74LS123N BURST GATE
IC7(1/4),(2/4) SN74LS00N PULSE GEN-1
IC8 (1/4)(2/4)(4/4) SN74LS26N PULSE GEN-2
Q34 2SK43 BURST CLAMP B-Y
IC5(1/2)(2/2) μPC4558C DC AMP-2
IC4(1/2)(2/2) μPC4558C DC AMP-1
Q33 2SK43 BURST CLAMP R-Y
Q35 2SA844 B/W SW
D8 1S1555 KILLER CLIP
+12V 7A
COMP VIDEO 8A
-12V 3A 22A
1H SYNC IN 14A
+5V 13A
Y CLAMP PULSE 12A
R-G-B CLAMP PULSE 10A
E 4A 5A 6A 9A
2A R-Y OUT
1A B-Y OUT
21A HUE
20A HUE
19A HUE-2
18A KILLER
11A B/W SW
CHROMA LEVEL
R-Y LEVEL
B-Y LEVEL
B-Y PHASE
3.58 MHz LEVEL
BURST CLAMP PULSE WIDTH
BURST GATE PULSE WIDTH
HUE
SWITCH

BB BOARD

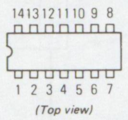

(LUMINANCE, COLOR GAIN) A-1135-081-A
BB
Q1-3,5,7 2SC403C Q6 2SA844
D1 RD5.1E-C D2 RD6.2E-B
OP AMP BB-1
IC1 CX718D
COLOR GAIN CONTROL
Q4 2SK43
R-Y GATE
Q8 2SK43
R-Y CLAMP
IC2(2/2) μPC4558C
R-Y CLAMP
NOTE; ALL RESISTORS ARE IN 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN THE PARTS LIST ARE CODED FROM 2001.
Q17 2SC403C IC8(4/4) SN74LS26N
AGC PULSE GEN
Q18-20,22 2SC403C
OP AMP BB-3
Q21,26 2SK43
AGC GATE
Q23 2SK43
AGC CLAMP
Q24 2SA844 Q25 2SC403C
AGC BUF
IC3 μPC4558C
COLOR AGC
D7 1S1555
AGC CLIPPER
Q29 2SK43 IC4 μPC4558C
G-Y CLAMP
G-Y PHASE
G-Y AMP
VECTOR R-Y LEVEL
VECTOR B-Y LEVEL
Q27 2SA844 Q28 2SC403C D8 RD4.3E-C
OP AMP BB-4
IC8(1/4),(2/4)
SN74LS26N
PULSE GEN
D5,6 1S1555
CLIPPER
Q9-11,13,15 2SC403C Q14 2SA844
D3 RD5.1E-C D4 RD6.2E-B
OP AMP BB-2
Q12 2SK43
B-Y GATE
Q16 2SK43
B-Y CLAMP
IC2(1/2) μPC4558C
B-Y CLAMP
IC7 μPC4558C Q40 2SK43
Y CLAMP
Q30 2SC403C
Y BUF-1
Q31 2SA844 Q32-34 2SC403C
2T PULSE CORRECTION
D9 RD8.2E-B
ACTIVE FILTER
IC5 CX130
TRAP SW
Q35 2SC403C
Y BUF-2
Q36 2SC403C
+5V FILTER
IC6 TA7158P
APERTURE
Q37,38 2SA844
MATRIX
Q39 2SC403C
Y BUF-3
Q41 2SA844 Q42 2SC403C
D10 RD4.3E-C
OP AMP BB-5
2T PULSE CORRECTION
3.58MHz TRAP
DL MATCHING
DL MATCHING RESISTOR
APEATUER PRESET
Y LEVEL
SWITCH
+12V
-12V
+5V
R-Y IN
AGC P
BRT CLAMP PULSE
WHITE CLAMP PULSE
B-Y IN
1H SYNC PULSE
Y-CLAMP PULSE
KILLER IN
COMP VIDEO
R-Y OUT
VECT OR R-Y OUT
E
G-Y OUT
COLOR VR
B-Y OUT
VICTO OR B-Y OUT
Y-OUT
APEA-TURE VR
TP1
TP2
TP3
TP4

BC BOARD

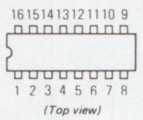
µPC4558C



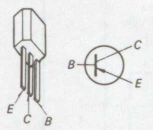
SN74LS00N
SN74LS26N



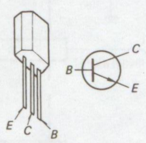
SN74LS123N
TC4053BP



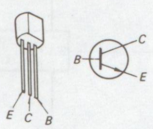
2SA844
2SA1027R



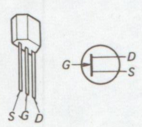
2SC403C

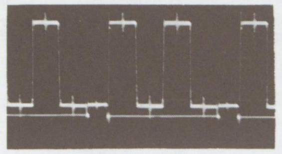


2SC1364

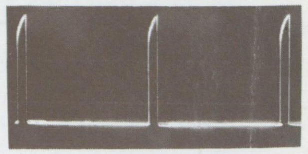


2SK23A

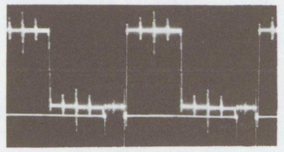




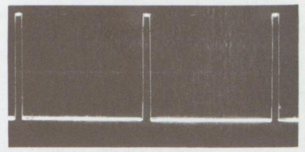
28 0.7 Vp-p (H)
31 0.76 Vp-p (H)



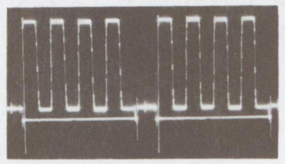
35 4 Vp-p (H)



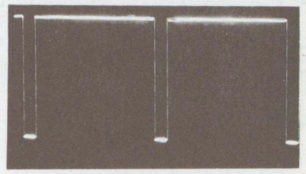
29 0.86 Vp-p (H)
32 0.92 Vp-p (H)



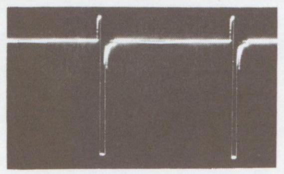
36 7.5 Vp-p (H)



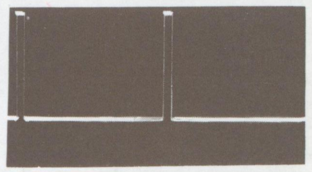
30 } 0.72 Vp-p (H)
33



37 4.4 Vp-p (H)
39 1.1 Vp-p (H)



34 5.2 Vp-p (H)



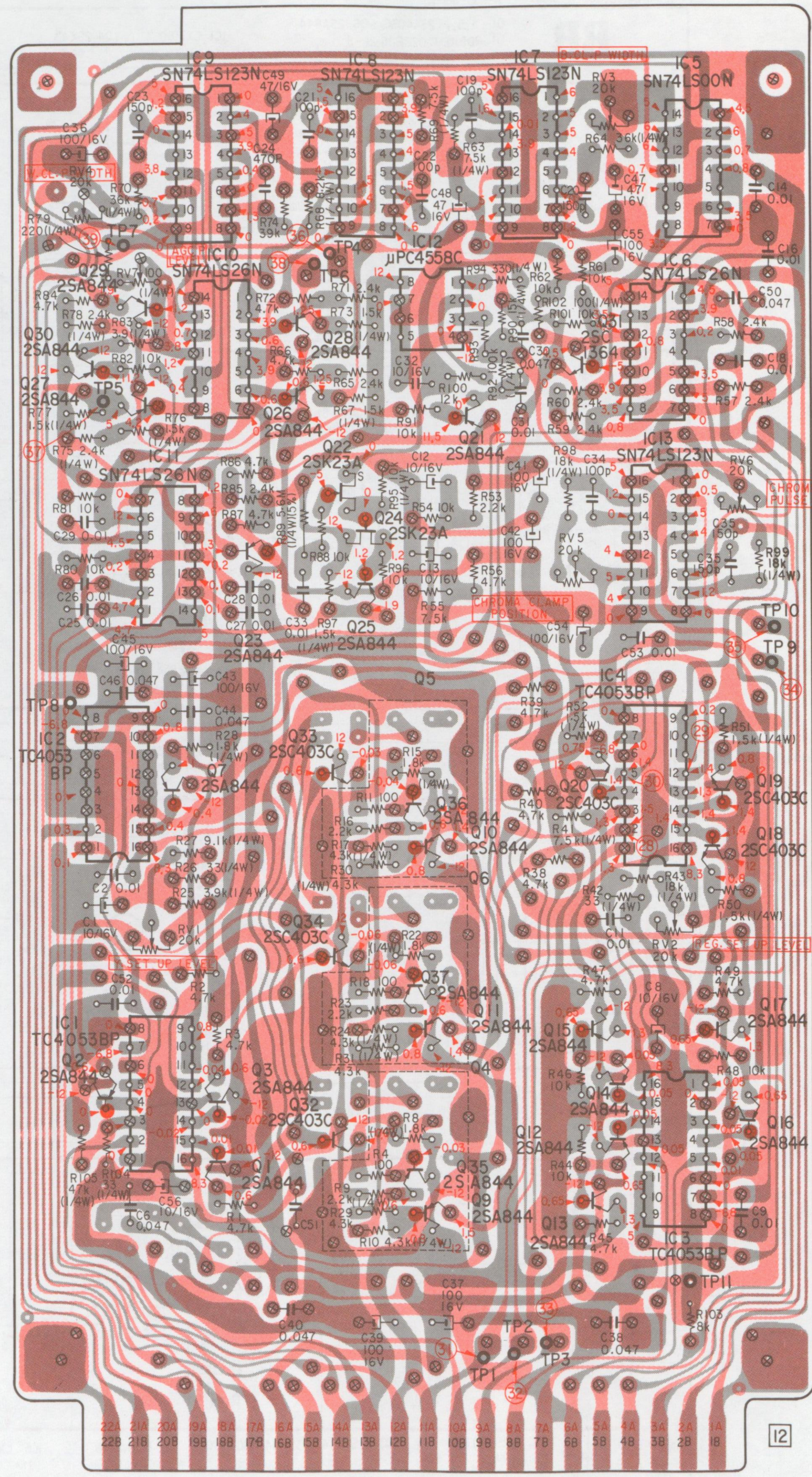
38 7.8 Vp-p (H)

Note: • Reference numbers on the BC board are of the 3000 series. (i.e., R1:R3001, C1:C3001, etc.)

• See page 6-1 for other notes.

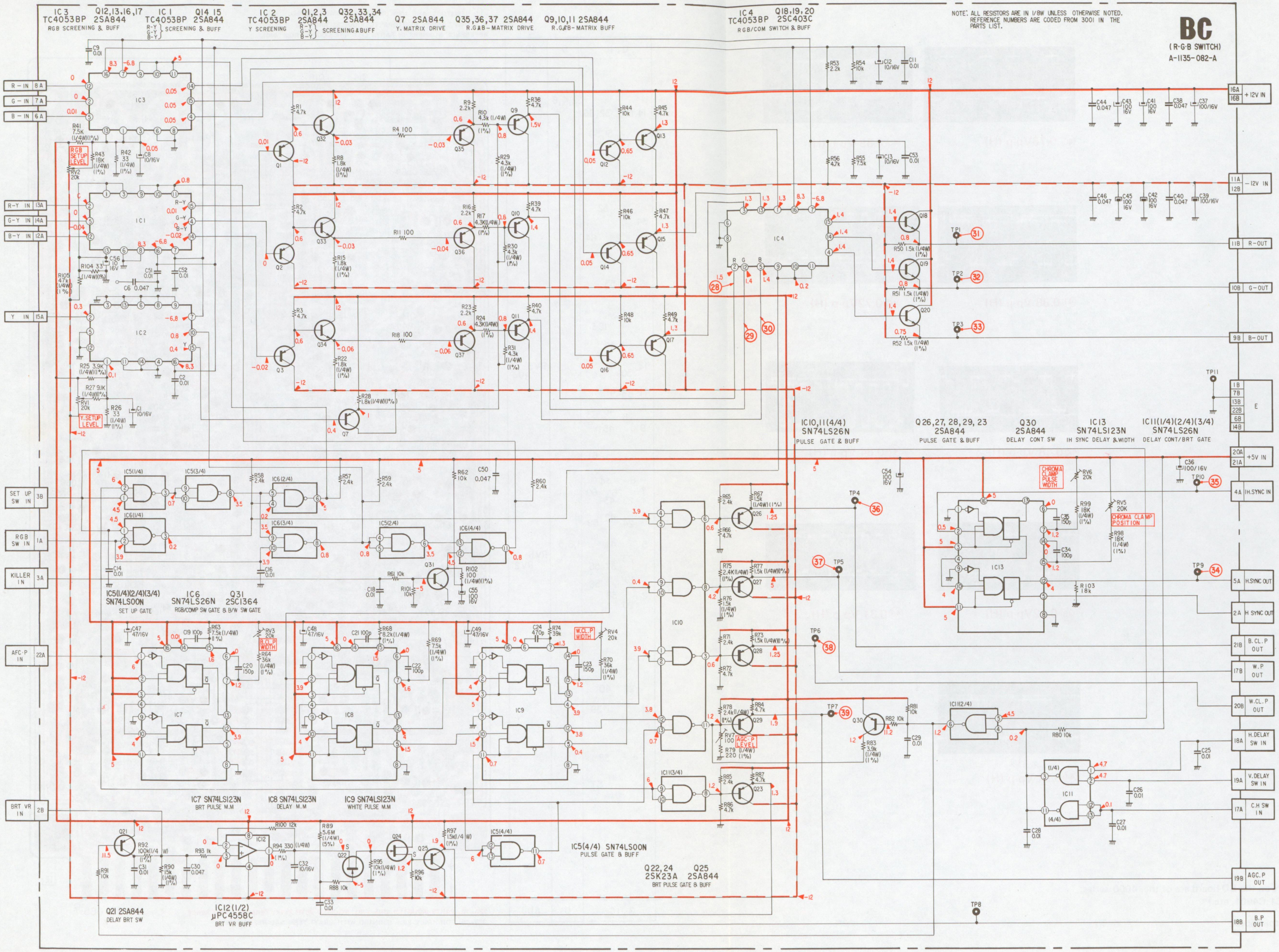
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL 1/4W CARBON RESISTOR'S TOLENANCE ARE ±1%.
REFERENCE NUMBERS IN THE PARTS LIST ARE CODED FROM 3001.

IC	Q	D	ADJ
9 8 7 5			RV3
			RV4
12 10 6	29		
	28		
	30 31		
	27 26 21		
	22		RV6
	24		
11 13	23		
			RV5
	25		
	5		
2 4	33 7 20,19		
	36		
	10, 18		
	6		
			RV2 RV1
	34		
	37		
	11, 15, 17		
	4		
1	2,3 14		
3	32 12 16		
	1 35		
	9 13		
	8		
IC	Q	D	ADJ



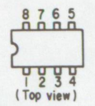
22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GARAY) TERMINAL REFERENCE

A-1135-082-A

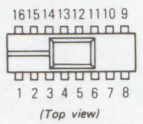

NOTE: ALL RESISTORS ARE IN 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS ARE CODED FROM 3001 IN THE PARTS LIST.
BC
(R·G·B SWITCH)
A-1135-082-A
IC3 TC4053BP RGB SCREENING & BUFF
Q12,13,16,17 2SA844
IC1 TC4053BP R-Y G-Y B-Y SCREENING & BUFF
Q14,15 2SA844
IC2 TC4053BP Y SCREENING
Q1,2,3 2SA844
Q32,33,34 2SA844 SCREENING & BUFF
Q7 2SA844 Y. MATRIX DRIVE
Q35,36,37 2SA844 R.G.&B-MATRIX DRIVE
Q9,10,11 2SA844 R.G.&B-MATRIX BUFF
IC4 TC4053BP RGB/COM SWITCH & BUFF
Q18,19,20 2SC403C
R-IN 8A
G-IN 7A
B-IN 6A
R-Y IN 13A
G-Y IN 14A
B-Y IN 12A
Y IN 15A
+12V IN 16A 16B
-12V IN 11A 12B
R-OUT 11B
G-OUT 10B
B-OUT 9B
RGB SETUP LEVEL
Y. SETUP LEVEL
IC10,11(4/4) SN74LS26N PULSE GATE & BUFF
Q26,27,28,29,23 2SA844 PULSE GATE & BUFF
Q30 2SA844 DELAY CONT SW
IC13 SN74LS123N 1H SYNC DELAY & WIDTH
IC11(1/4)(2/4)(3/4) SN74LS26N DELAY CONT/BRT GATE
+5V IN 20A 21A
H.SYNC IN 4A
H.SYNC OUT 5A
H SYNC OUT 2A
B.CL.P OUT 21B
W.P OUT 17B
W.CL.P OUT 20B
H.DELAY SW IN 18A
V.DELAY SW IN 19A
C.H SW IN 17A
AGC.P OUT 19B
B.P OUT 18B
CHROMA CLAMP PULSE WIDTH
CHROMA CLAMP POSITION
SET UP SW IN 3B
RGB SW IN 1A
KILLER IN 3A
AFC-P IN 22A
BRT VR IN 2B
IC5(1/4)(2/4)(3/4) SN74LS00N SET UP GATE
IC6 SN74LS26N RGB/COMP SW GATE & B/W SW GATE
Q31 2SC1364
B.CL.P WIDTH
W.CL.P WIDTH
AGC-P LEVEL
IC7 SN74LS123N BRT PULSE M.M
IC8 SN74LS123N DELAY M.M
IC9 SN74LS123N WHITE PULSE M.M
IC5(4/4) SN74LS00N PULSE GATE & BUFF
Q22,24 2SK23A
Q25 2SA844 BRT PULSE GATE & BUFF
Q21 2SA844 DELAY BRT SW
IC12(1/2) μPC4558C BRT VR BUFF

BD BOARD

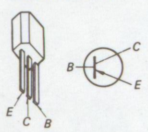
μPC4558C



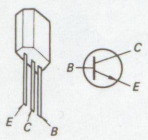
CX718D



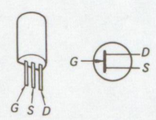
2SA844
2SA1027R



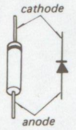
2SC403C



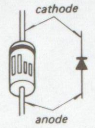
2SK43

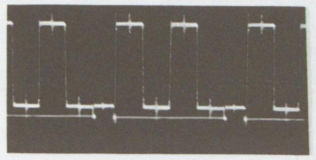


IS1555

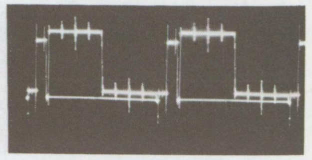


EQA01-05
EQB01-05

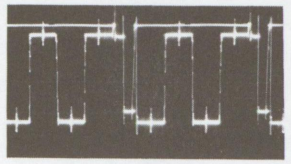




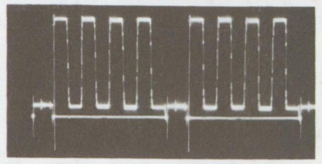
40 0.76Vp-p (H)



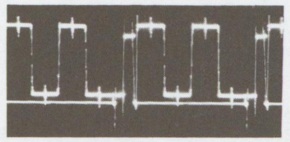
45 0.39 Vp-p (H)



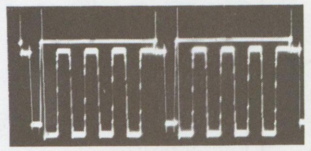
41 0.88 Vp-p (H)



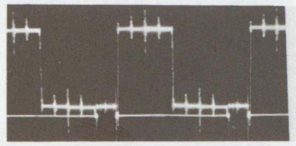
46 0.72Vp-p (H)



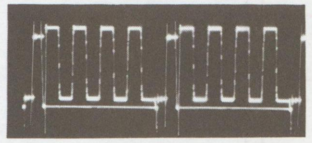
42 0.48 Vp-p (H)



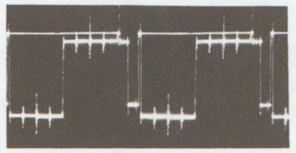
47 0.84 Vp-p (H)



43 0.92Vp-p (H)



48 0.31 Vp-p (H)

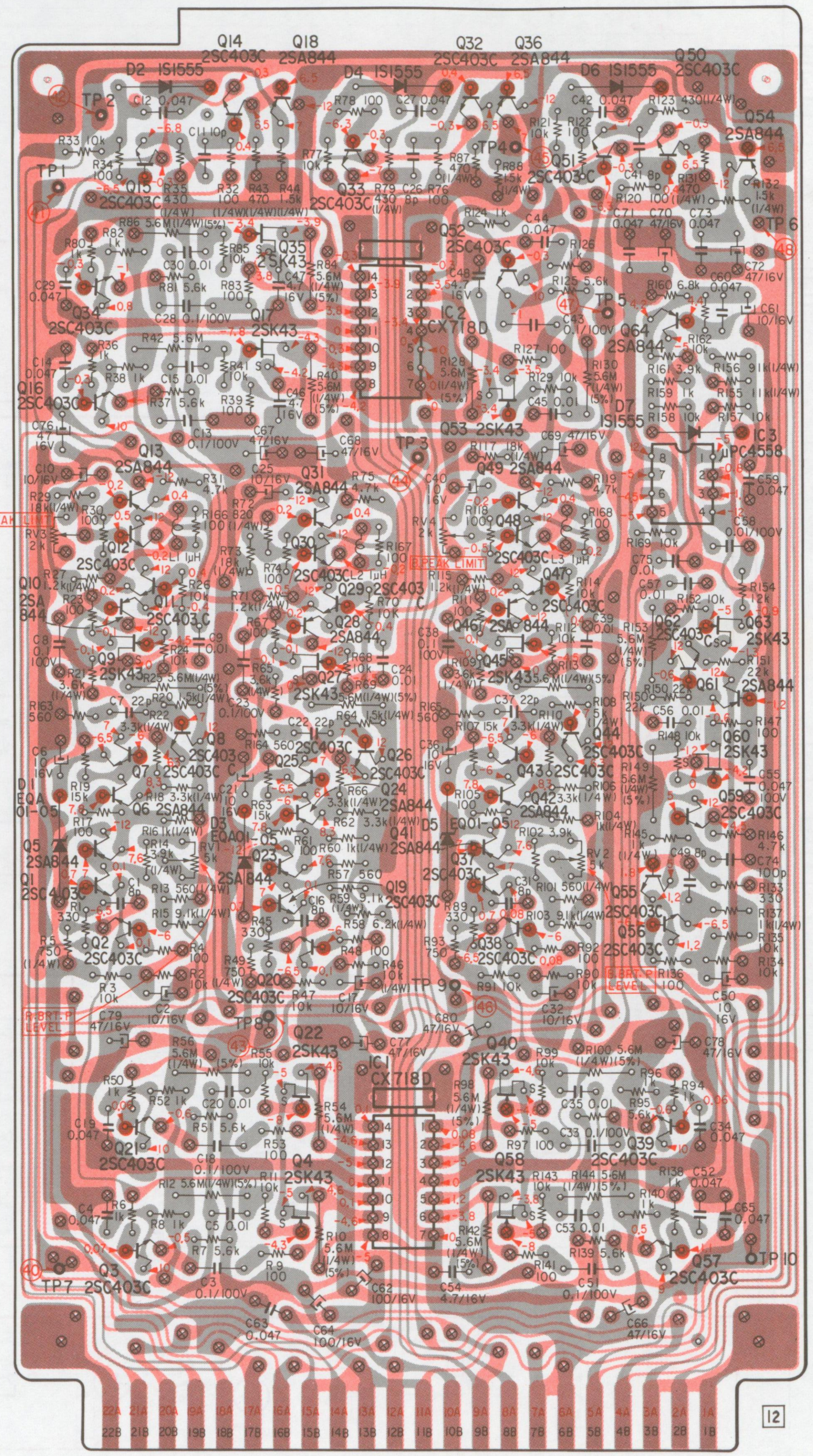


44 0.94 Vp-p (H)

Note:
- Reference numbers on the BD board are of the 4000 series. (i.e., R1:R4001, C1:C4001, etc.)
- See page 6-1 for other notes.

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL 1/4W CARBON RESITORS' TOLERANCES ARE ±1%.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 4001.

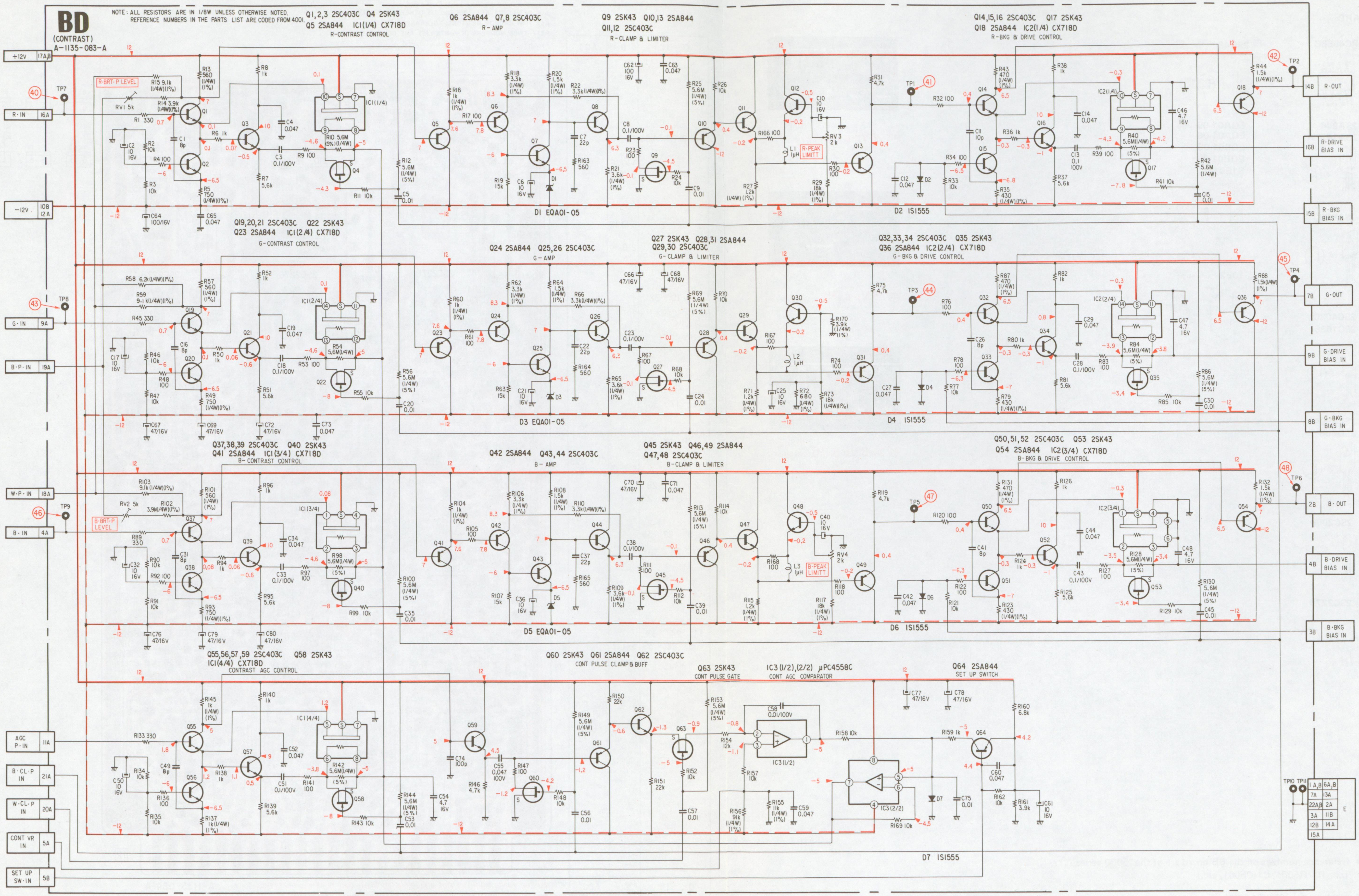
Q, IC	D	ADJ
	2,4,6	
14,18 32,36		
51,50		
15 33 54		
35		
52		
34		
IC2 64		
17		
16 53		
	7	
IC3		
13 49		
31		
12 48		RV3
30		RV4
11 47		
29		
10 46 63		
28		
9 45		
27		
61		
8 44		
7 26 60		
25 43		
6 42 59		
24		
5 41	1,3,5	
23		RV1
37 55		RV2
1		
19 56		
2 38		
20		
22 40		
21 39		
4 58		
3 57		
Q, IC	D	ADJ



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

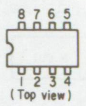
A-1135-085-A

BD BOARD

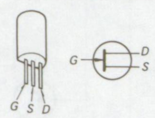

BD
(CONTRAST)
A-1135-083-A
NOTE: ALL RESISTORS ARE IN 1/8W UNLESS OTHERWISE NOTED. REFERENCE NUMBERS IN THE PARTS LIST ARE CODED FROM 400.
Q1,2,3 2SC403C Q4 2SK43
Q5 2SA844 IC1(1/4) CX718D
R-CONTRAST CONTROL
Q6 2SA844 Q7,8 2SC403C
R-AMP
Q9 2SK43 Q10,13 2SA844
Q11,12 2SC403C
R-CLAMP & LIMITER
Q14,15,16 2SC403C Q17 2SK43
Q18 2SA844 IC2(1/4) CX718D
R-BKG & DRIVE CONTROL
Q19,20,21 2SC403C Q22 2SK43
Q23 2SA844 IC1(2/4) CX718D
G-CONTRAST CONTROL
Q24 2SA844 Q25,26 2SC403C
G-AMP
Q27 2SK43 Q28,31 2SA844
Q29,30 2SC403C
G-CLAMP & LIMITER
Q32,33,34 2SC403C Q35 2SK43
Q36 2SA844 IC2(2/4) CX718D
G-BKG & DRIVE CONTROL
Q37,38,39 2SC403C Q40 2SK43
Q41 2SA844 IC1(3/4) CX718D
B-CONTRAST CONTROL
Q42 2SA844 Q43,44 2SC403C
B-AMP
Q45 2SK43 Q46,49 2SA844
Q47,48 2SC403C
B-CLAMP & LIMITER
Q50,51,52 2SC403C Q53 2SK43
Q54 2SA844 IC2(3/4) CX718D
B-BKG & DRIVE CONTROL
Q55,56,57,59 2SC403C Q58 2SK43
IC1(4/4) CX718D
CONTRAST AGC CONTROL
Q60 2SK43 Q61 2SA844 Q62 2SC403C
CONT PULSE CLAMP & BUFF
Q63 2SK43
CONT PULSE GATE
IC3(1/2),(2/2) μPC4558C
CONT AGC COMPARATOR
Q64 2SA844
SET UP SWITCH
D1 EQA01-05
D2 1S1555
D3 EQA01-05
D4 1S1555
D5 EQA01-05
D6 1S1555
D7 1S1555
+12V
R-IN
-12V
G-IN
B-P-IN
W-P-IN
B-IN
AGC P-IN
B-CL-P IN
W-CL-P IN
CONT VR IN
SET UP SW-IN
R-OUT
R-DRIVE BIAS IN
R-BKG BIAS IN
G-OUT
G-DRIVE BIAS IN
G-BKG BIAS IN
B-OUT
B-DRIVE BIAS IN
B-BKG BIAS IN
R-BRT-P LEVEL
B-BRT-P LEVEL
R-PEAK LIMITT
B-PEAK LIMITT
TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP11

BE BOARD

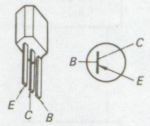
µPC4558C



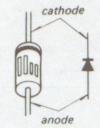
2SK43



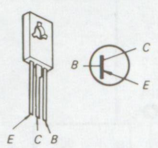
2SA844
2SA1027R



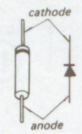
EQA01-05
EQA01-06
EQB01-05
EQB01-06
S1B01-02



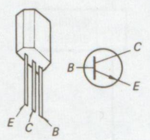
2SA899



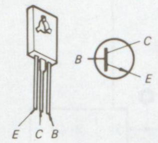
IS1555
10E2



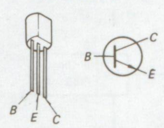
2SC403C
2SC1636



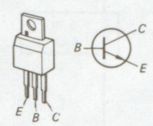
2SC1904
2SD668



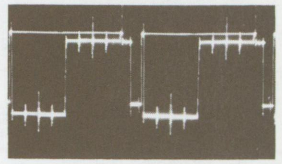
2SC2009



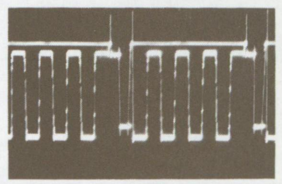
2SC2278



⑭ 30Vp-p (H)



⑮ 28 Vp-p (H)

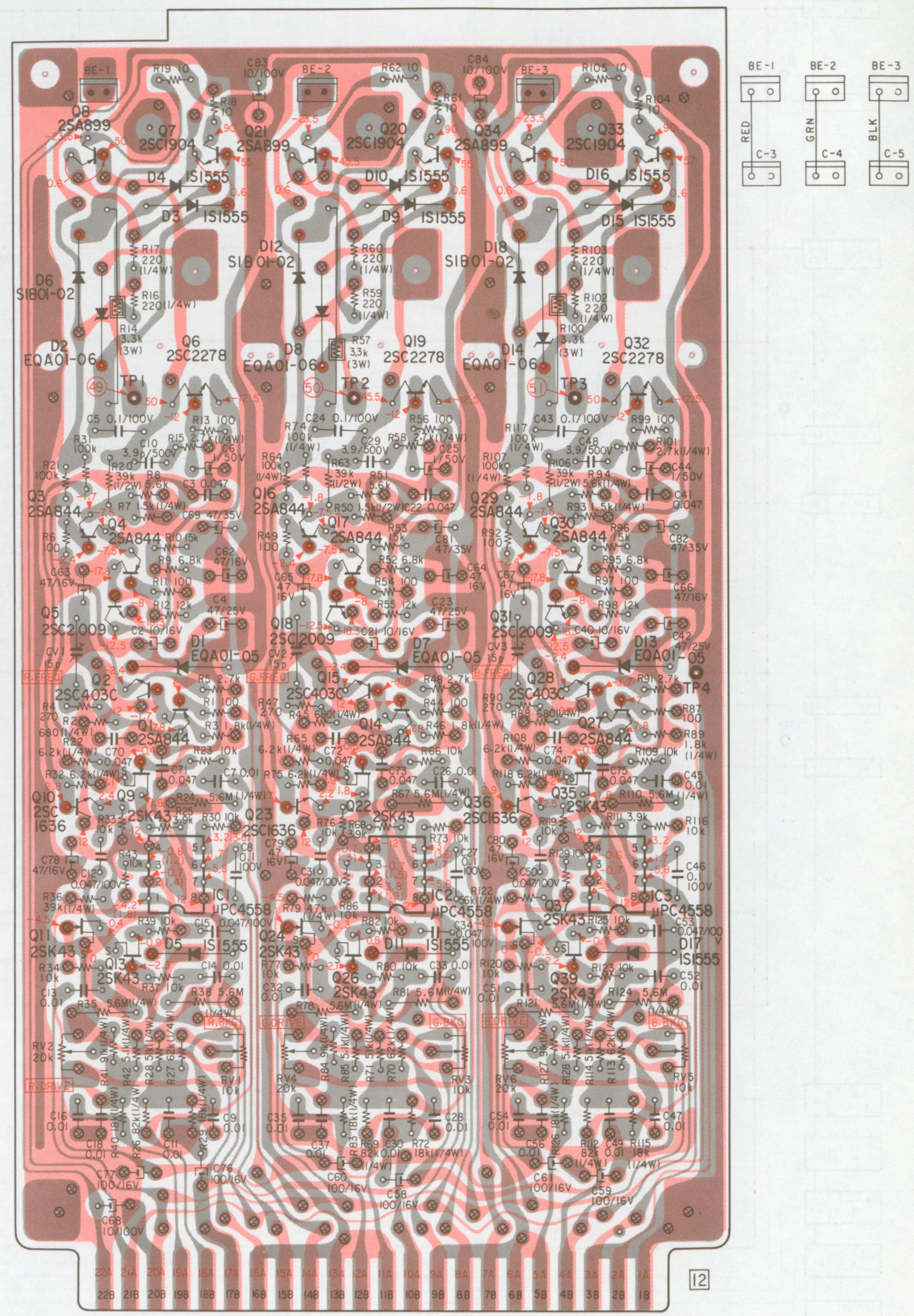


⑯ 21.5 Vp-p (H)

Note:
- Reference numbers on the BE board are of the 5000 series. (i.e., R1:R5001, C1:C5001, etc.)
- See page 6-1 for othr notes.

Q, IC	D	ADJ
8 7 21 20 34 33		
	4 10 16 3 9 15	
	6 12 18 2 8 14	
6 19 32		
3 16 29		
4 17 30		
5 18 31		
	1 7 13	CV1 CV3 CV2
2 15 28 1 14 27		
9 22 35		
10 23 36		
IC1 IC2 IC3		
11 24 37 13 26 39	5 11 17	
		RV2 RV6 RV1 RV5 RV4 RV3
Q, IC	D	ADJ

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL 1/4W CARBON RESITORS' TOLERANCES ARE ±1%.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 5001.



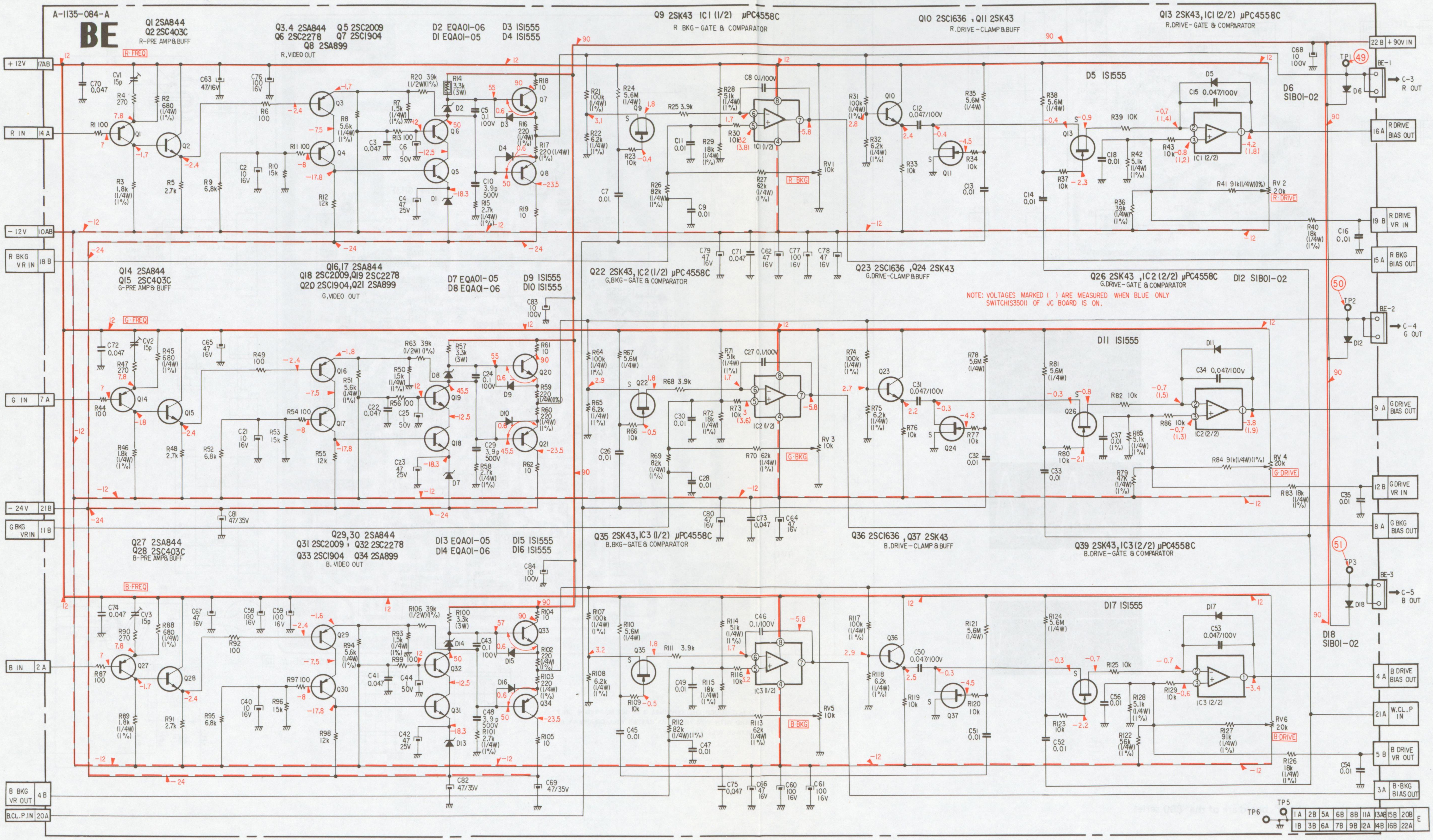
22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

A-1135-084-A

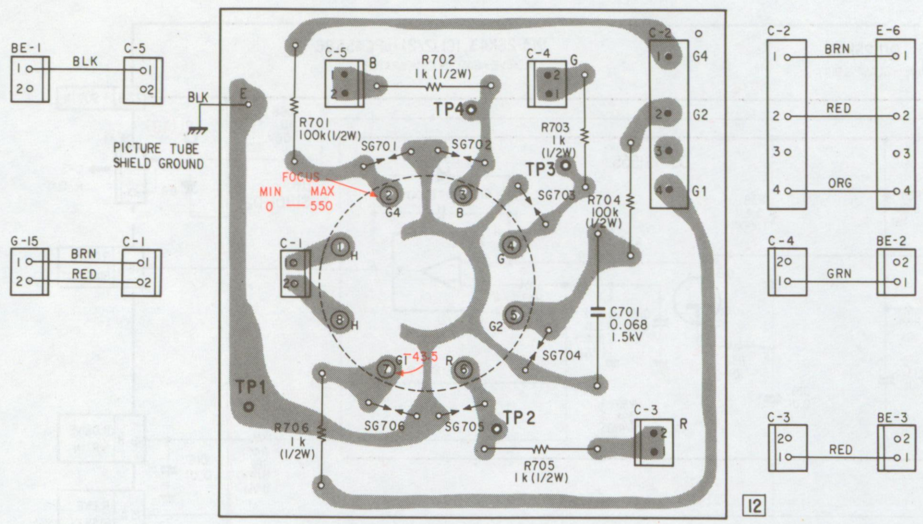
VOLTAGES MAKED ( ) ARE MEASURED WHEN BLUE ONLY SWITCH (S3501) OF JC BOARD IS ON.

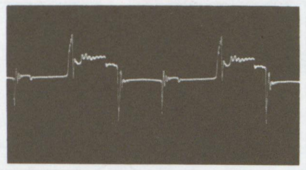
BE BOARD

NOTE: ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 5001.

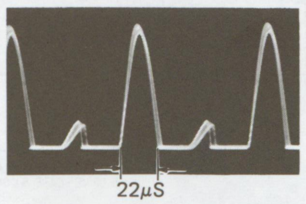


C AND P BOARDS

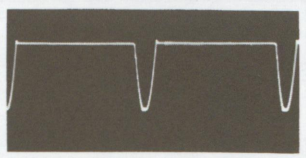




52 6.4 Vp-p (H)

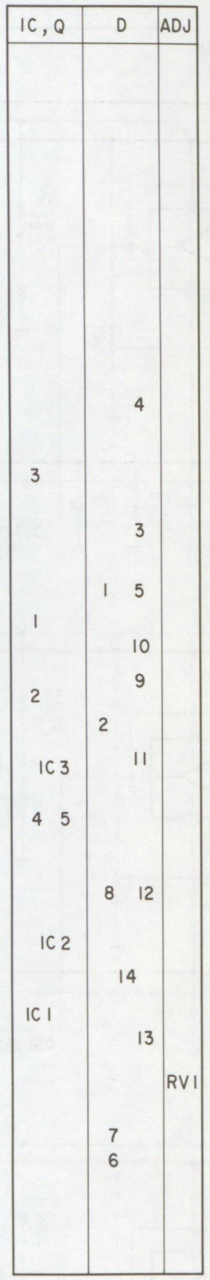


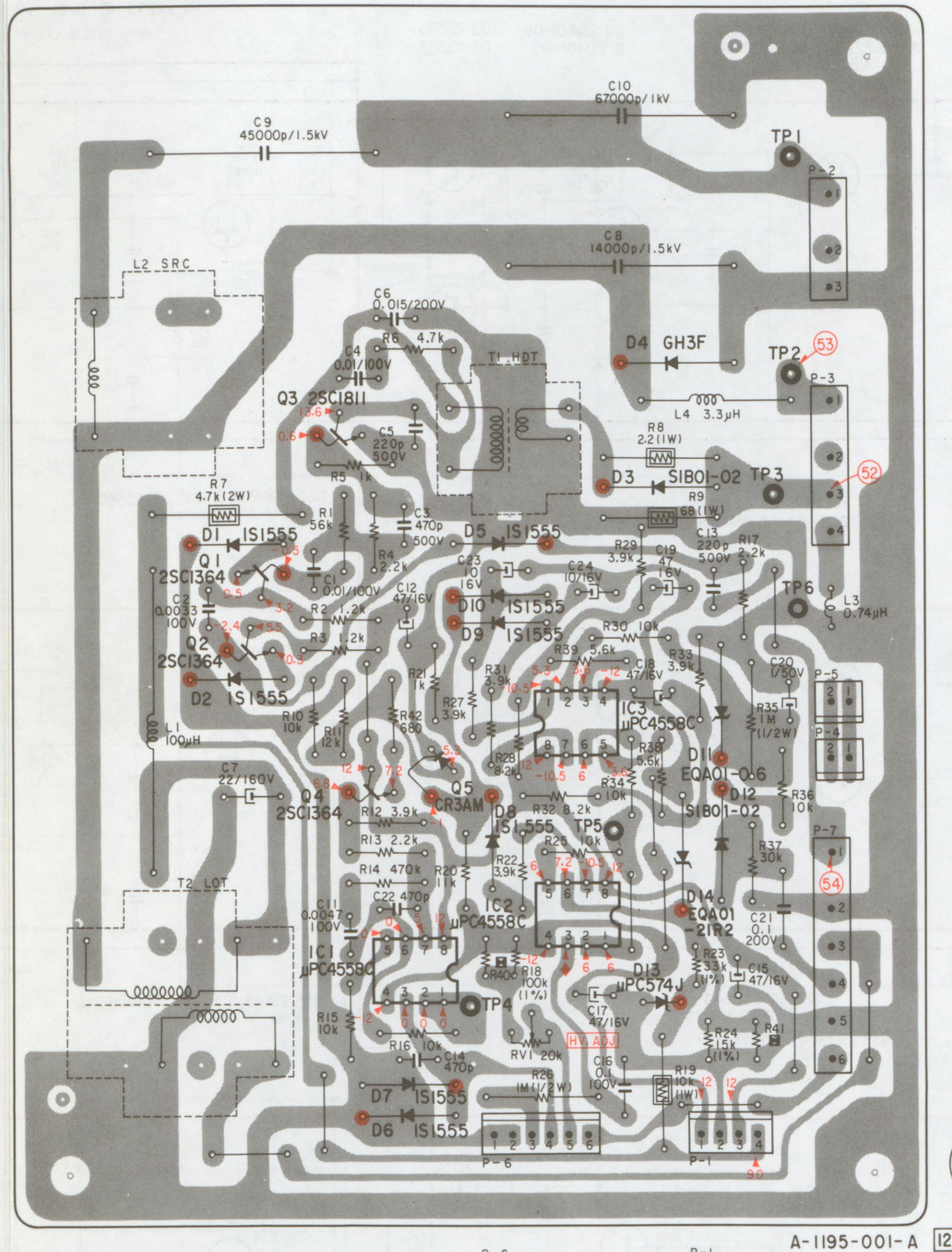
53 450 Vp-p (H)

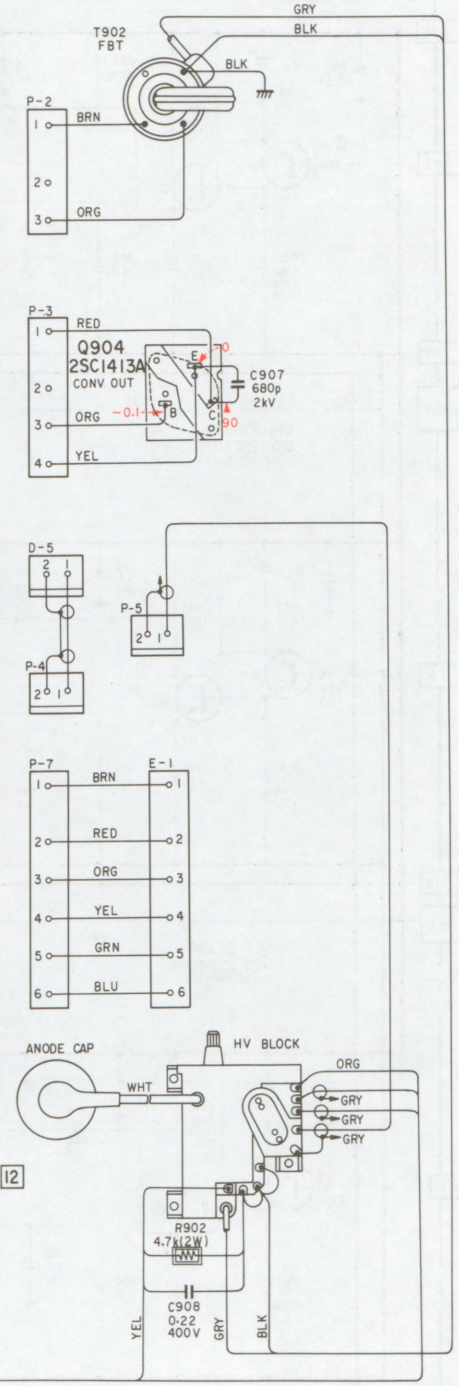


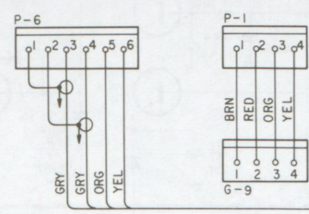
54 130 Vp-p (H)

REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 801.
ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTED.







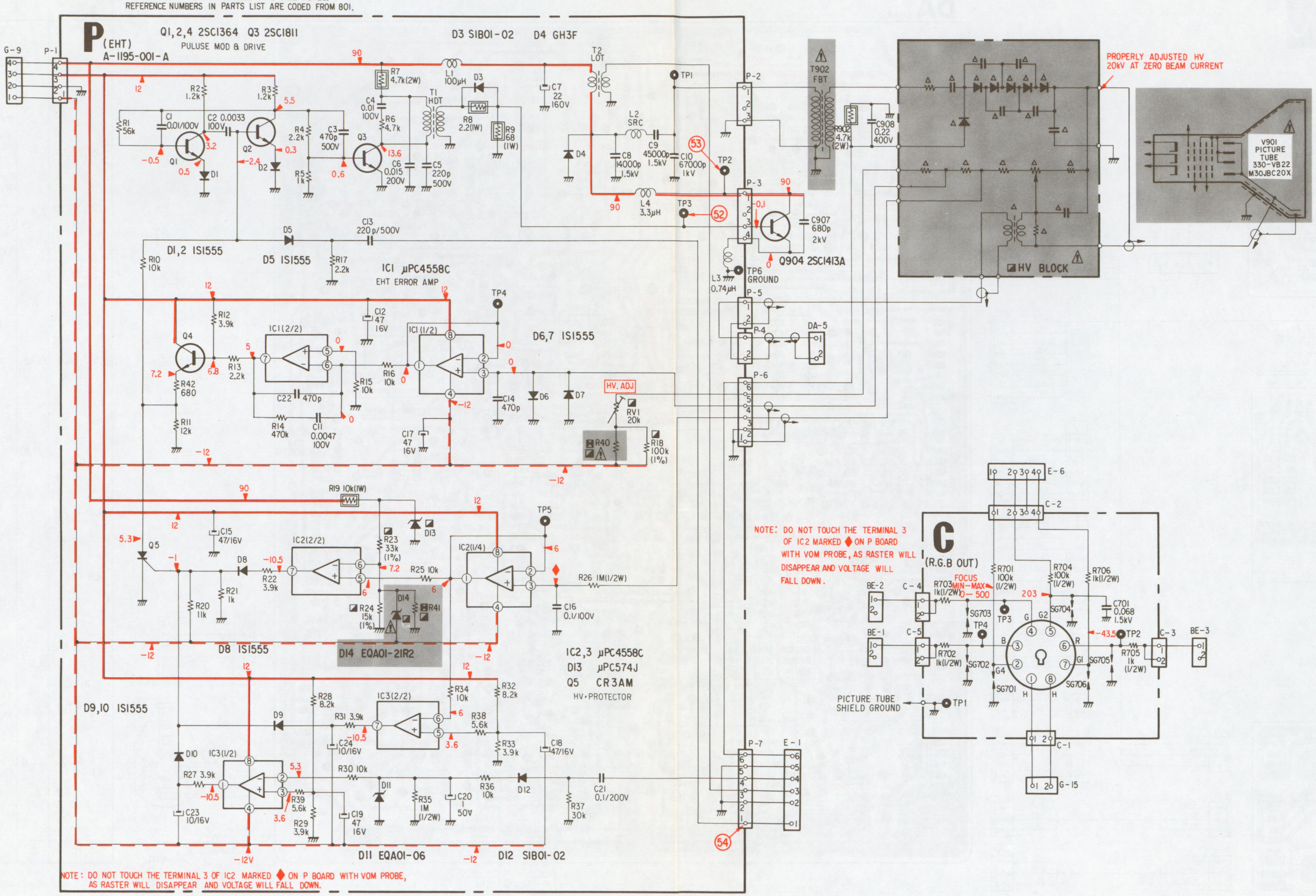


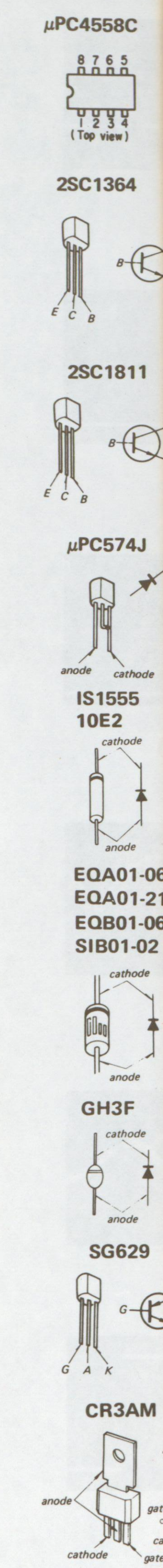
DO NOT TOUCH THE TERMINAL 3 OF IC2 MARKED ◆ ON P BOARD WITH VOM PROBE, AS RASTER WILL DISAPPEAR AND VOLTAGE WILL FALL DOWN.

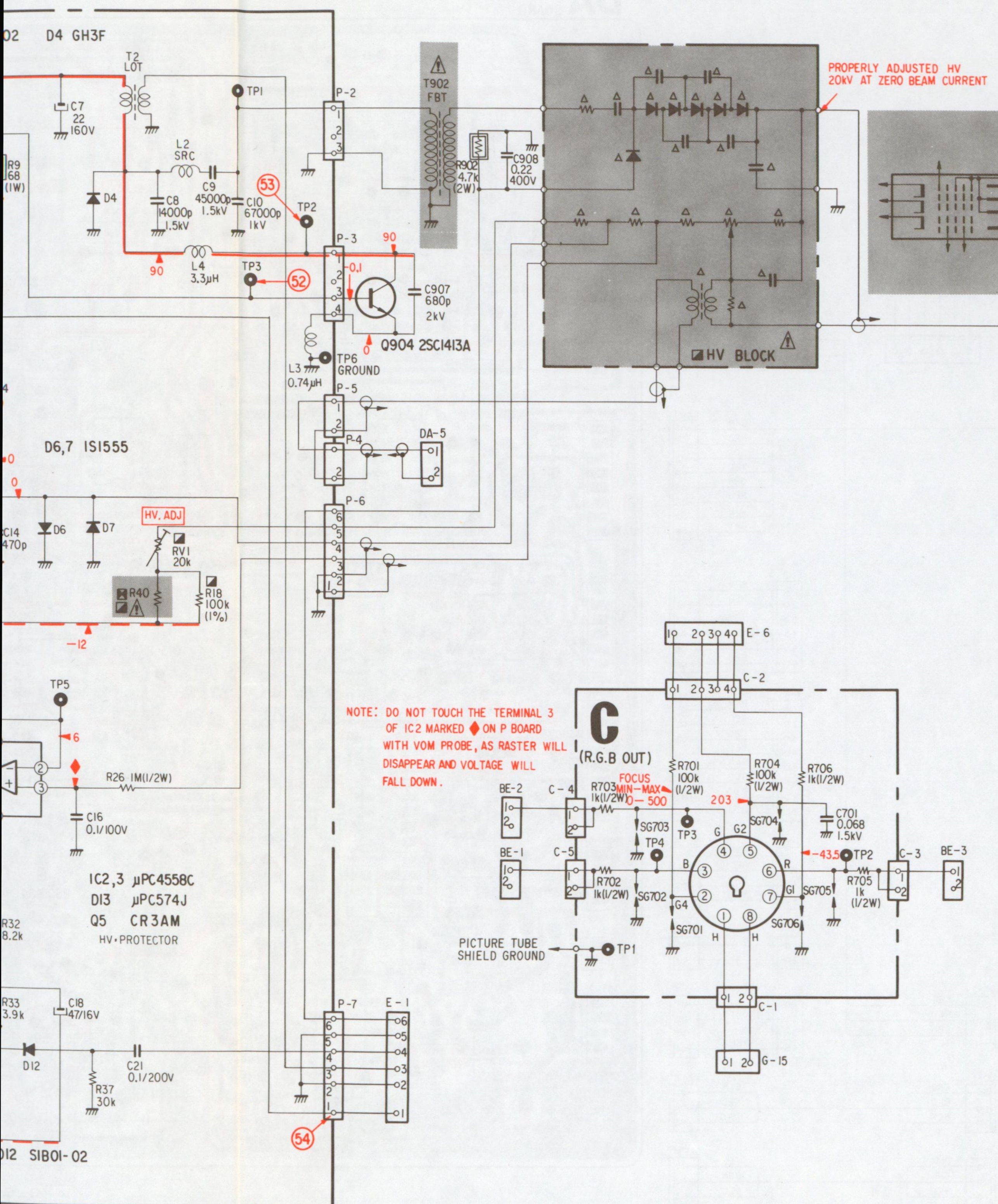
Note:
- Reference numbers on the P board are of the 800 series. (i.e., R1:R801, C1:C801, etc.)
- Reference numbers on the C board are of the 700 series. (i.e., R1:R701, C1:C701, etc.)
- See page 6-1 for other notes.

C AND P BOARDS

NOTE: ALL RESISTOR ARE 1/4W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 801.

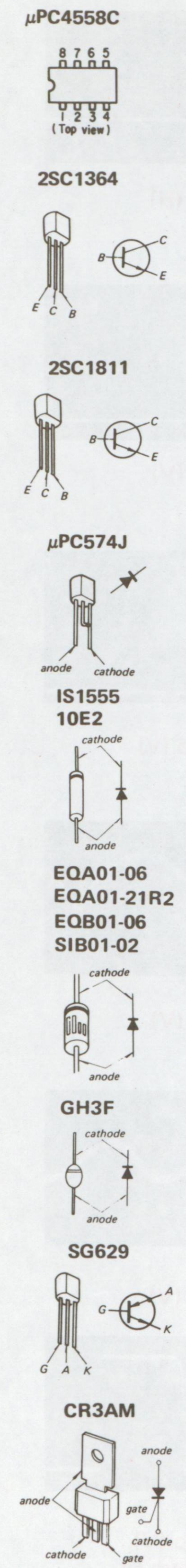




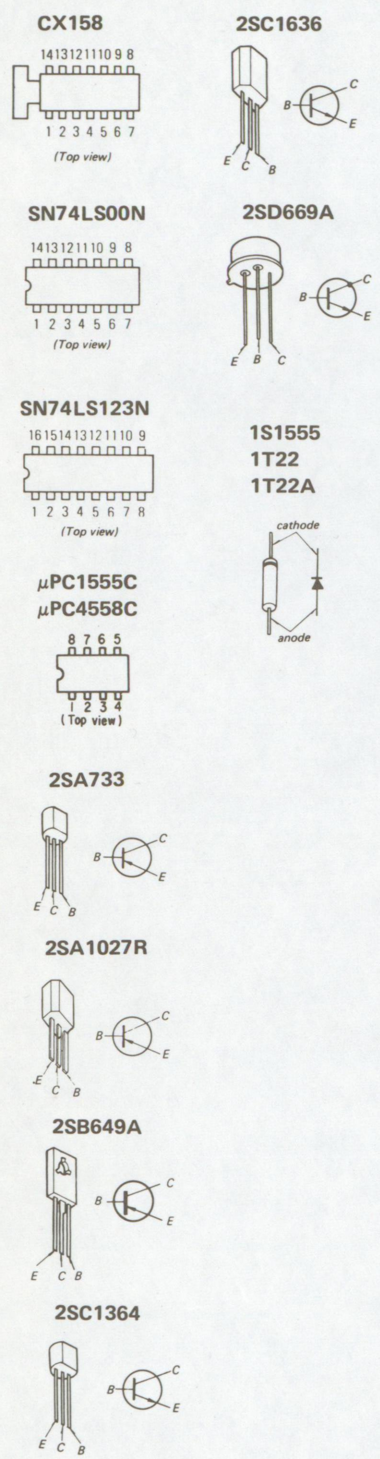


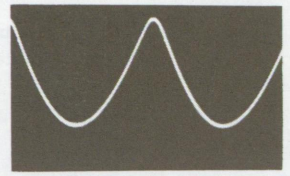
> **Note:** The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

> **Note:** Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

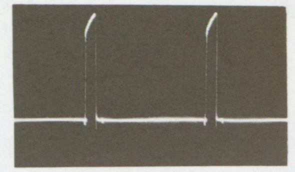


DA, DB, JB AND JC BOARDS

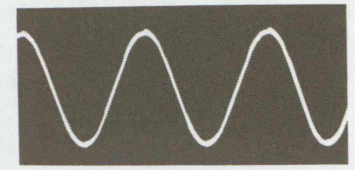




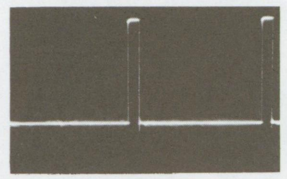
64 3.9 Vp-p (H)



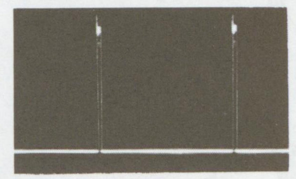
69 4.2 Vp-p (H)



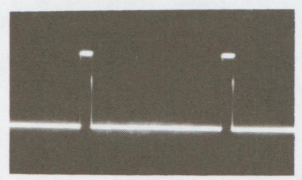
82 185 Vp-p (V)



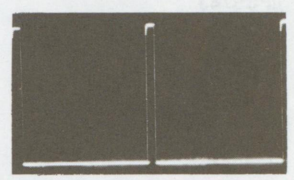
65 8 Vp-p (H)



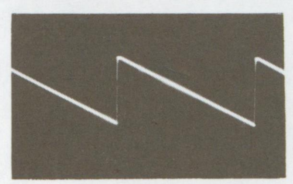
70 5.4 Vp-p (V)



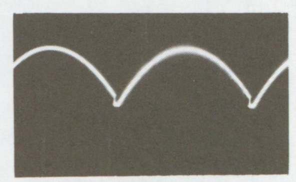
66 1.4 Vp-p (H)



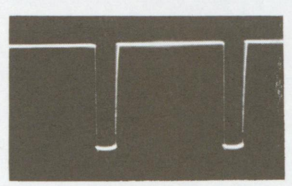
71 11.6 Vp-p (V)



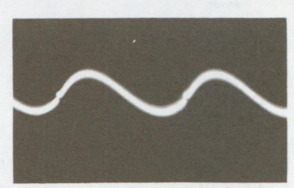
67 12.5 Vp-p (V)



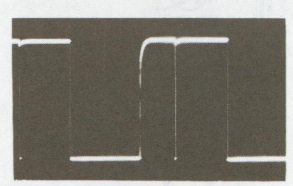
72 4.2 Vp-p (V)



68 7.6 Vp-p (H)

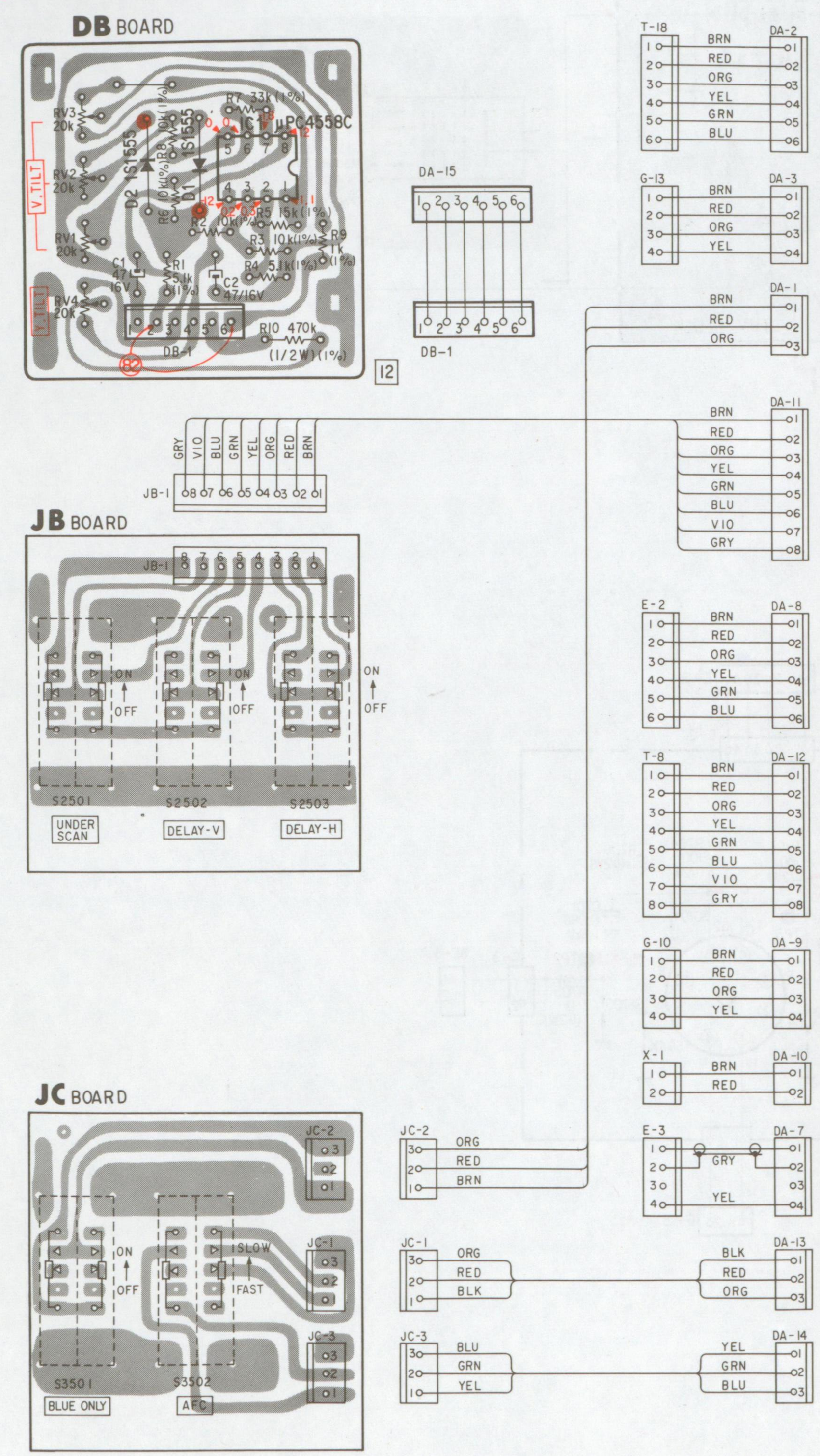


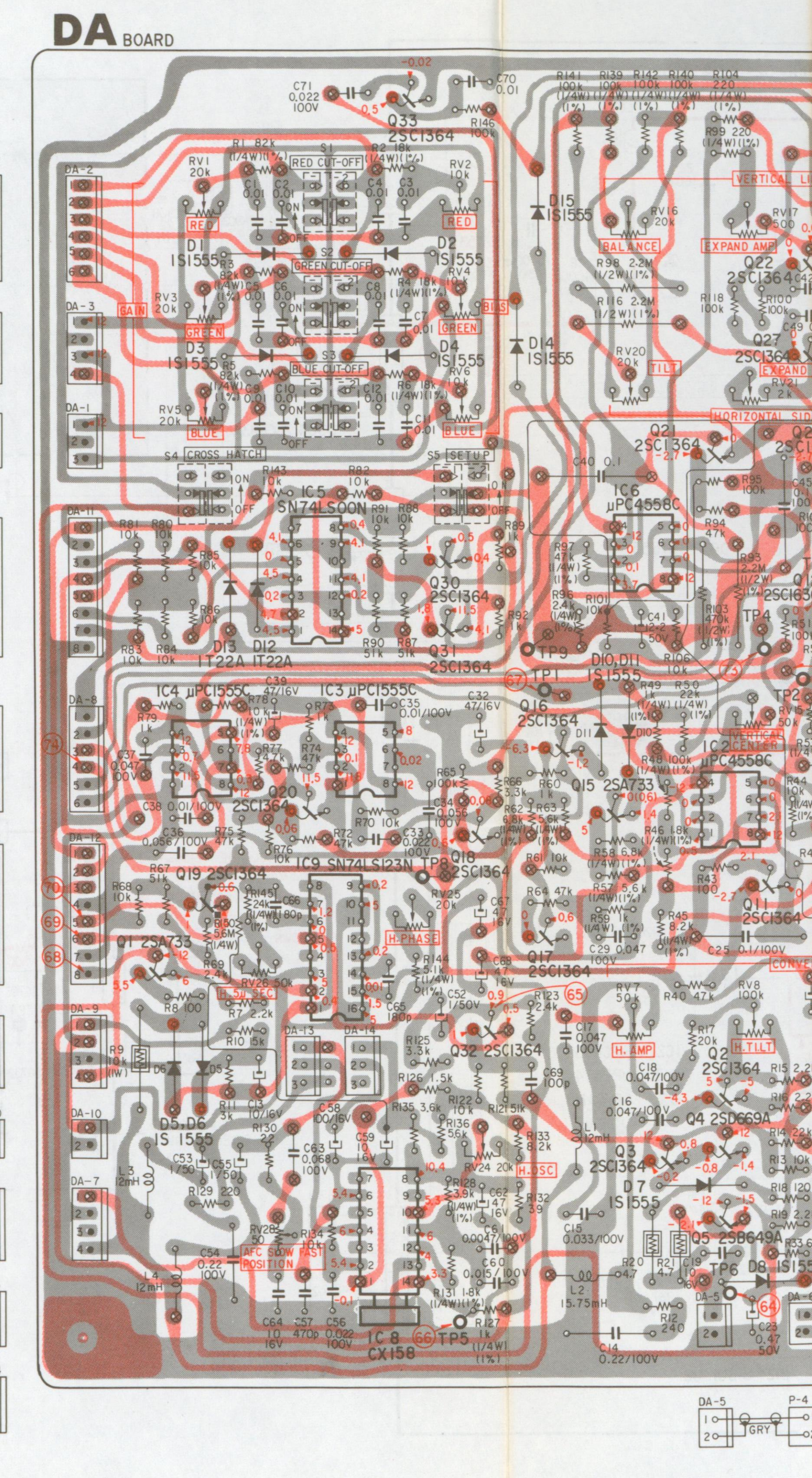
73 0.3 Vp-p (V)



74 10.4 Vp-p (V)
DELAY-V switch on

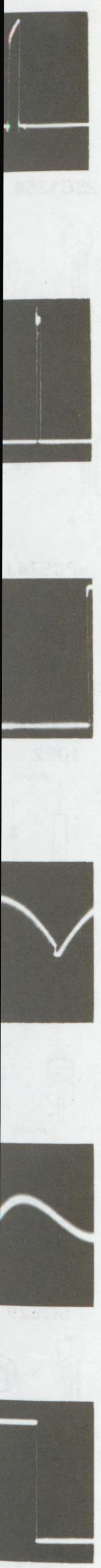
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 6001.
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.

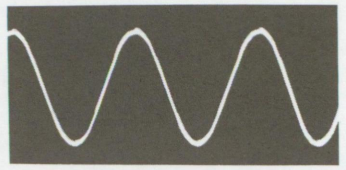




Note:
- Reference numbers on the JB board are of the 2500 series. (i.e., S1: S2501, etc.)
- Reference numbers on the JC board are of the 3500 series. (i.e., S1:S3501, etc.)
- Reference numbers on the D board are of the 6000 series. (i.e., R1:R6001, C1:C6001, etc.)
- See page 6-1 for other notes.

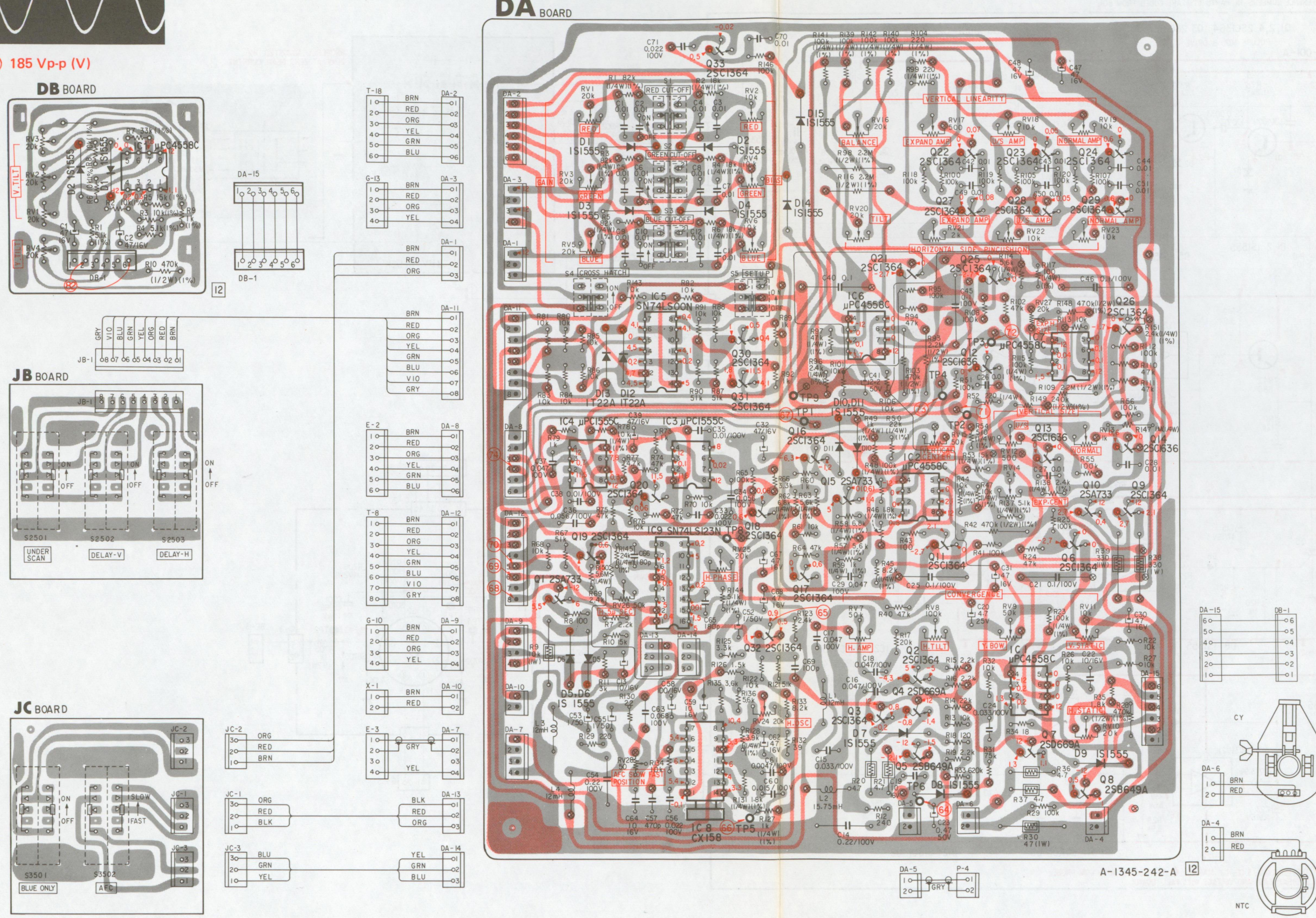
DA, DB, JB, JC





82 185 Vp-p (V)

REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 6001.
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.



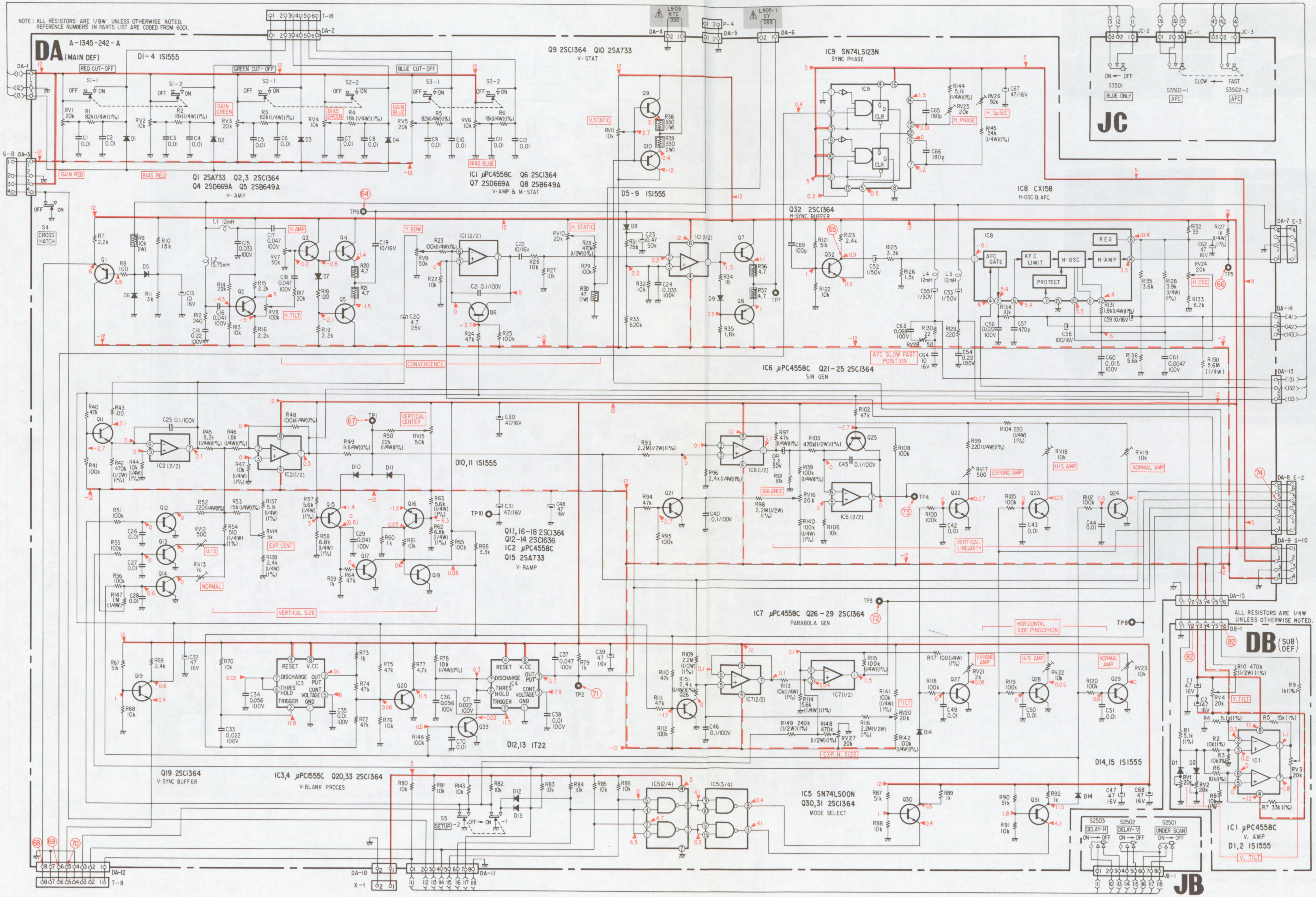
Q, IC	D	ADJ
33		
	15	RV1, RV2 RV16, 17, 18, 19
22, 23, 24	1, 2	
		RV3, RV4
27, 28, 29	3, 4 14	
		RV20, 21, 22, 23 RV5, RV6
21, 25		
		RV27
IC6 26		
IC5 30 31 IC7 12	13, 12	
	11, 10	RV15, RV12, RV13
IC4 IC3 16 13 14		
		RV14
20, 18, 15 IC2 10, 9		
11, 6		
19		RV25
IC9 17		
1		RV26
32		RV7, 8, 9, 11
	5, 6	
2 IC1		
4 3		RV24
	7	RV10
5 7 IC8	9	RV28
8	8	
Q, IC	D	ADJ

DA, DB, JB, JC

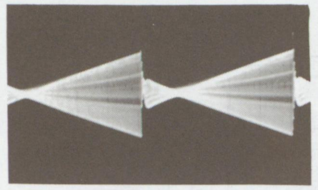
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

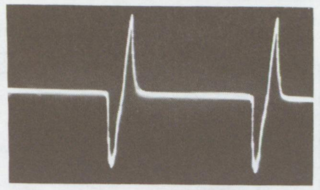
DA, DB, JB AND JC BOARDS



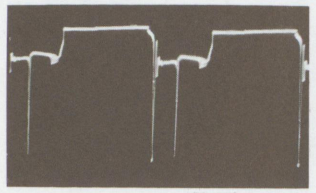
E BOARD



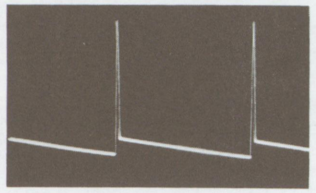
⑤⑤ 29 Vp-p (V)



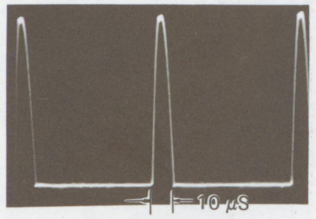
⑥⓪ 0.3 Vp-p (H)
UNDER SCAN switch on



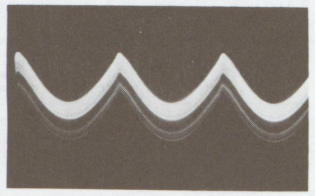
⑤⑥ 9.8 Vp-p (H)



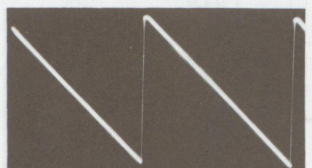
⑥① 100 Vp-p (V)



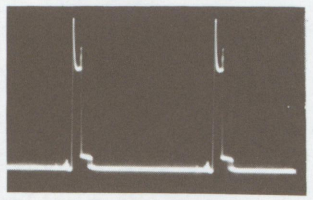
⑤⑦ 830 Vp-p (H)



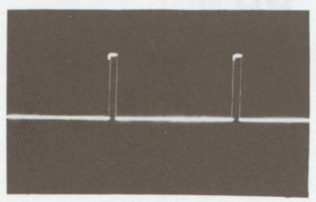
⑥② 0.64 Vp-p (V)



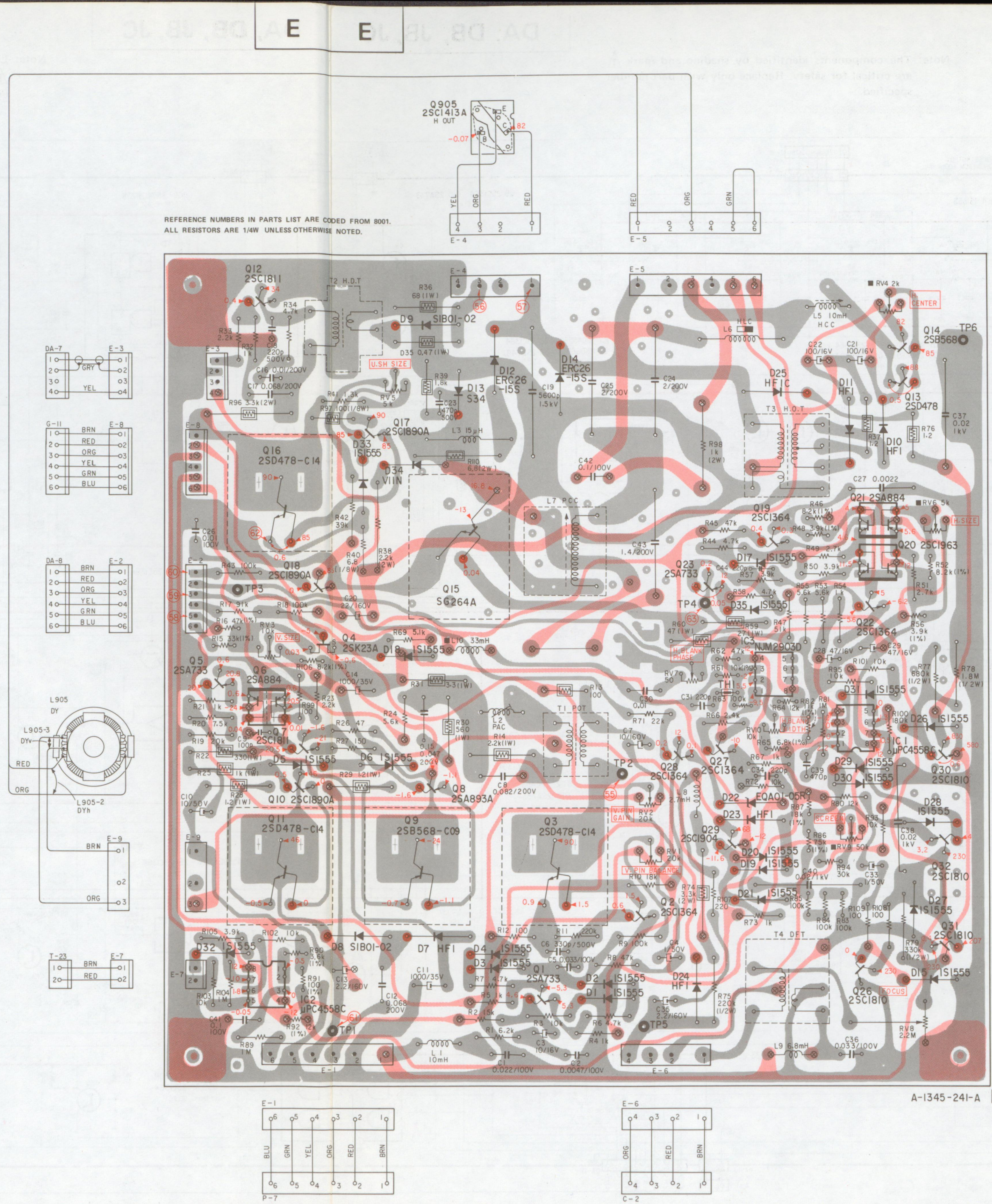
⑤⑧ 10.8 Vp-p (V)



⑥③ 10 Vp-p (H)



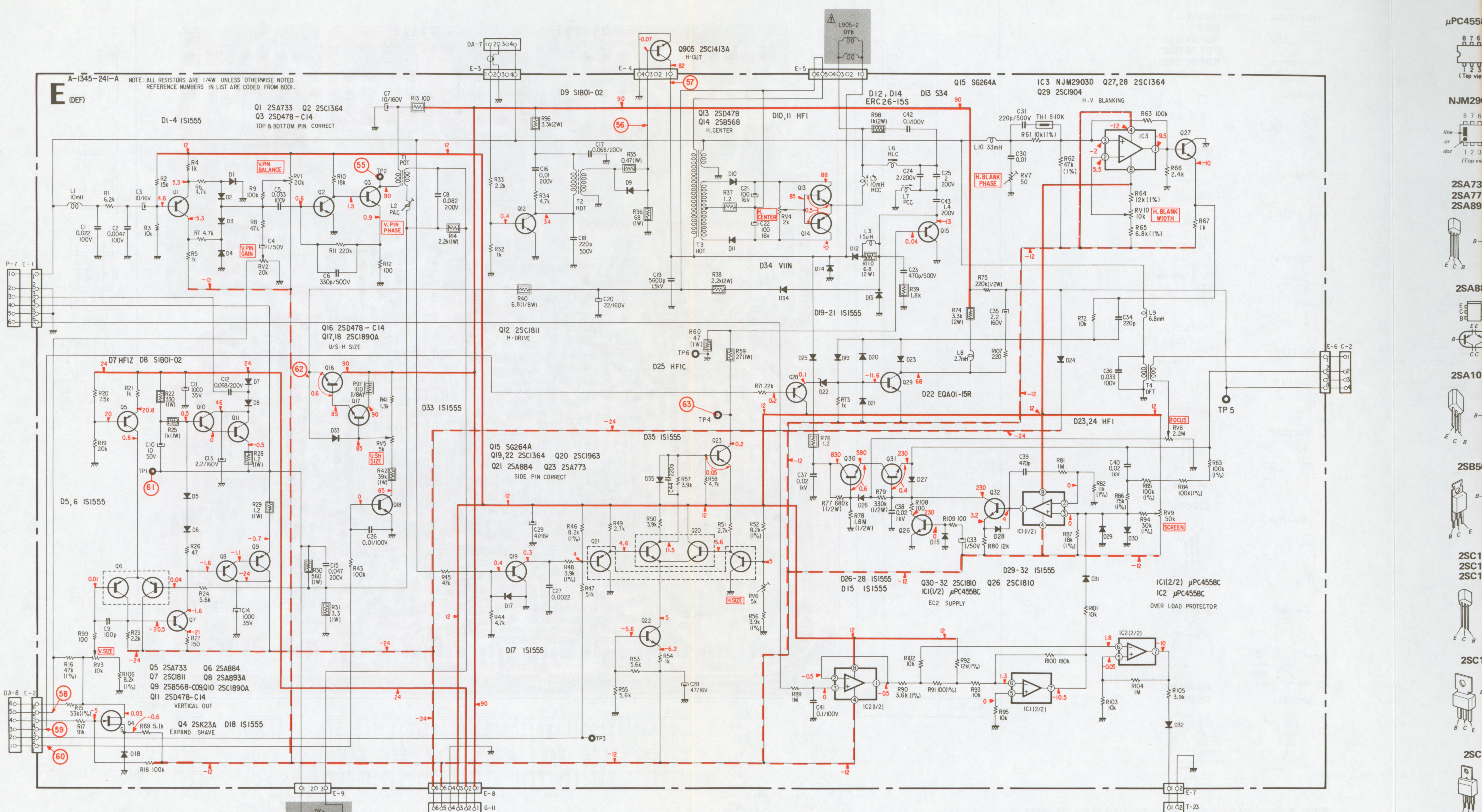
⑤⑨ 12 Vp-p (V)

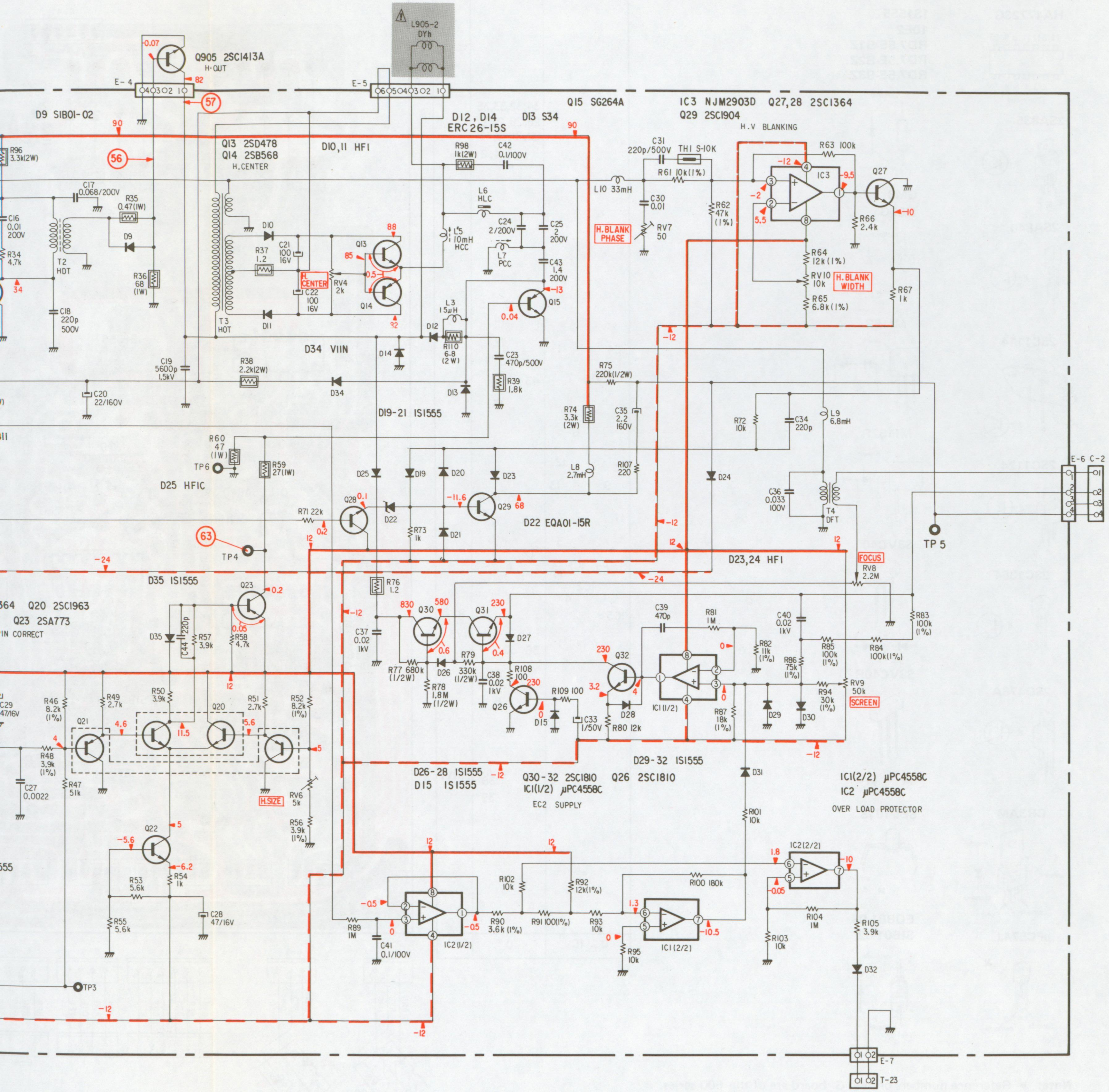


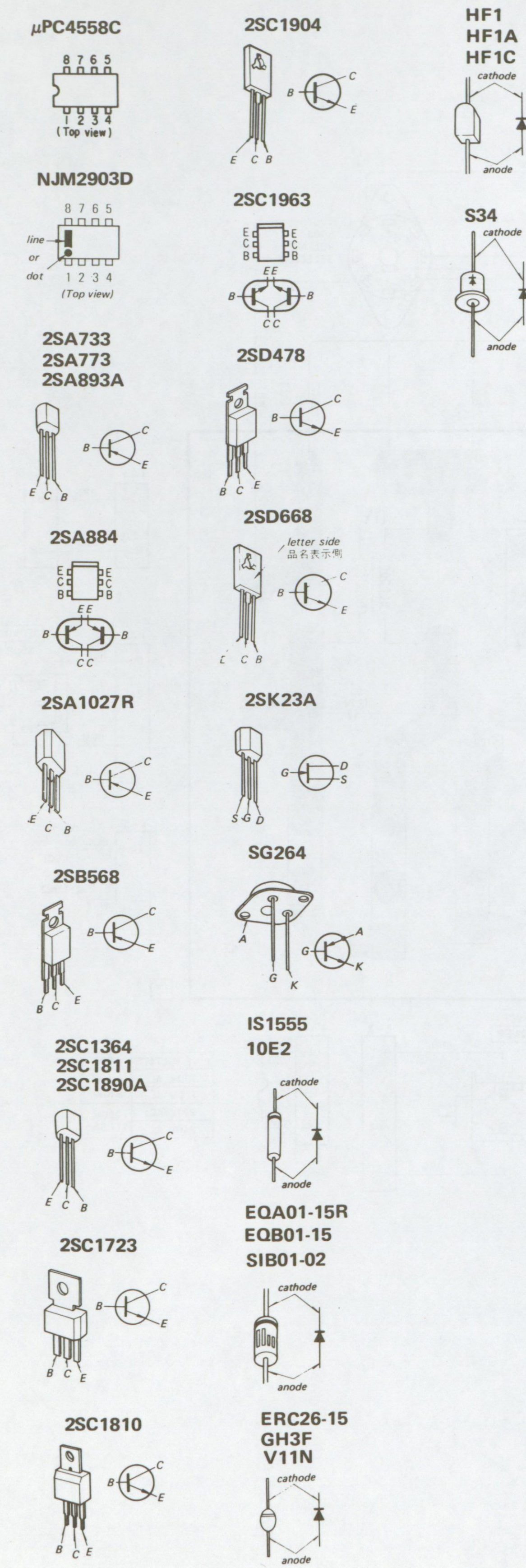
Q , IC	D	ADJ
12		
		RV4
	9	
14		
	12	RV5
	14	
13	25	
	13	
17	34 11 10	
16	33	
15 21		RV6
19		
20	17	
18 23		
22	35	
4		
IC3		RV3
		RV7
26		
5		
	31	
6 25	18	
IC1	26	
27		
7 28 30		
	5,6	
	29	
10 8	30	RV2
	22	
	23	
	28	RV9
29 32		RV1
	20	
	19	
11 9 3	21	
2		
	27	
31	8,7 4	
	32 3	
	15	
	2 24	
26	1	
IC2 1		
Q , IC	D	ADJ

Note:
- Reference numbers on the E board are of the 8000 series. (i.e., R1:R8001, C1:C8001, etc.)
- See page 6-1 for other notes.

E BOARD


A-1345-241-A
E (DEF)
NOTE: ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN LIST ARE CODED FROM 8001.
D1-4 1S1555
Q1 2SA733 Q2 2SC1364
Q3 2SD478-C14
TOP & BOTTOM PIN CORRECT
Q905 2SC1413A
H-OUT
L905-2
DYh
D9 S1B01-02
Q13 2SD478
Q14 2SB568
H.CENTER
D10,11 HF1
D12, D14 ERC26-15S
D13 S34
Q15 SG264A
IC3 NJM2903D
Q29 2SC1904
Q27,28 2SC1364
H.V BLANKING
D34 V11N
D19-21 1S1555
Q16 2SD478-C14
Q17,18 2SC1890A
U/S-H SIZE
Q12 2SC1811
H-DRIVE
D7 HF1Z D8 S1B01-02
D25 HF1C
D22 EQA01-15R
D33 1S1555
D35 1S1555
D23,24 HF1
Q15 SG264A
Q19,22 2SC1364 Q20 2SC1963
Q21 2SA884 Q23 2SA773
SIDE PIN CORRECT
D5,6 1S1555
D26-28 1S1555
D15 1S1555
Q30-32 2SC1810
IC1(1/2) μPC4558C
Q26 2SC1810
EC2 SUPPLY
D29-32 1S1555
IC1(2/2) μPC4558C
IC2 μPC4558C
OVER LOAD PROTECTOR
D17 1S1555
Q5 2SA733 Q6 2SA884
Q7 2SC1811 Q8 2SA893A
Q9 2SB568-C09 Q10 2SC1890A
Q11 2SD478-C14
VERTICAL OUT
Q4 2SK23A D18 1S1555
EXPAND SHAVE
L905-3
DYv
TP1 TP2 TP3 TP4 TP5 TP6
V.PIN BALANCE
V.PIN GAIN
V.PIN PHASE
U.SH SIZE
H.CENTER
H.BLANK PHASE
H.BLANK WIDTH
FOCUS
SCREEN
H.SIZE
V.SIZE
μPC4558
NJM29
2SA733
2SA77
2SA89
2SA88
2SA10
2SB5
2SC1
2SC

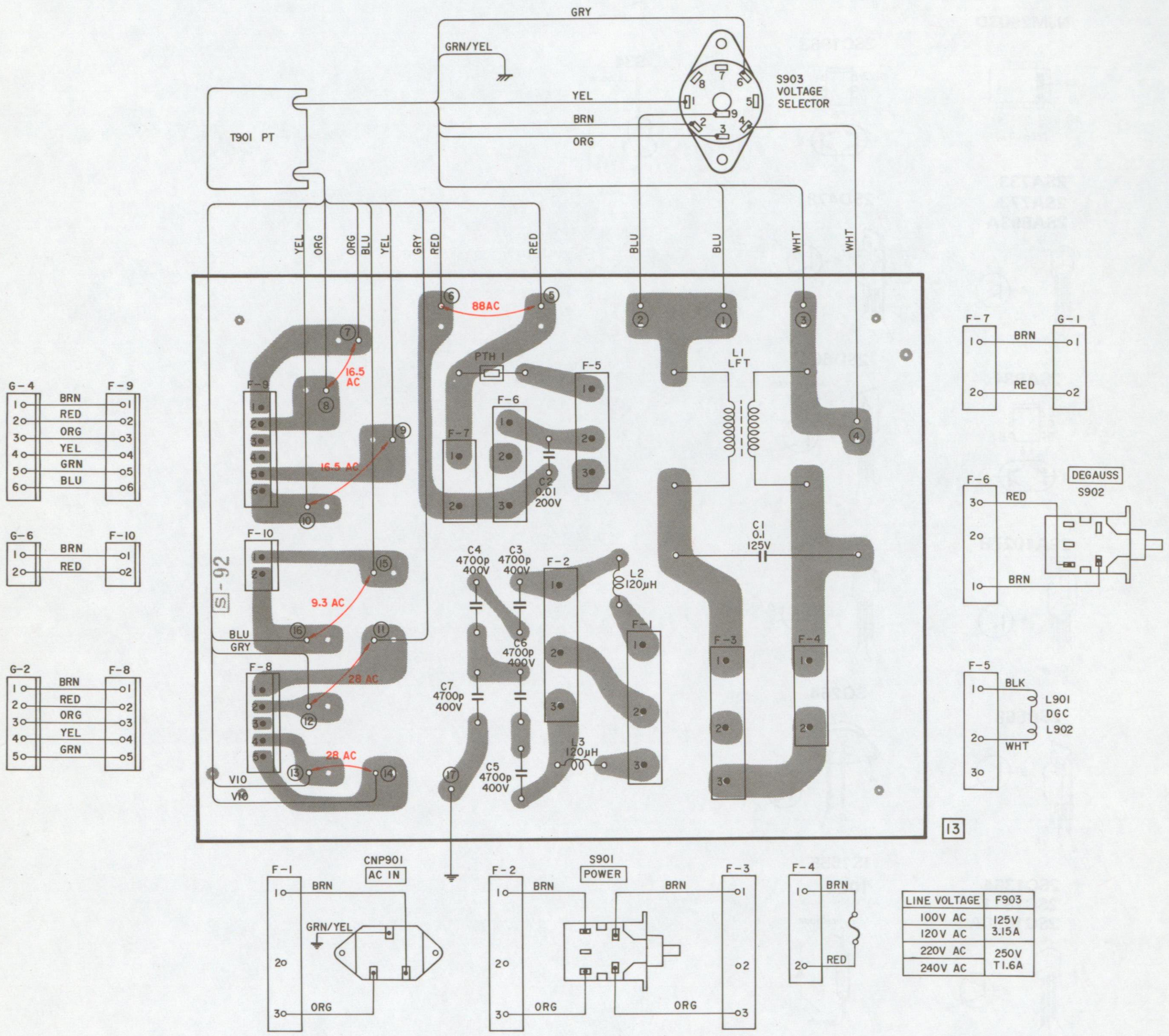


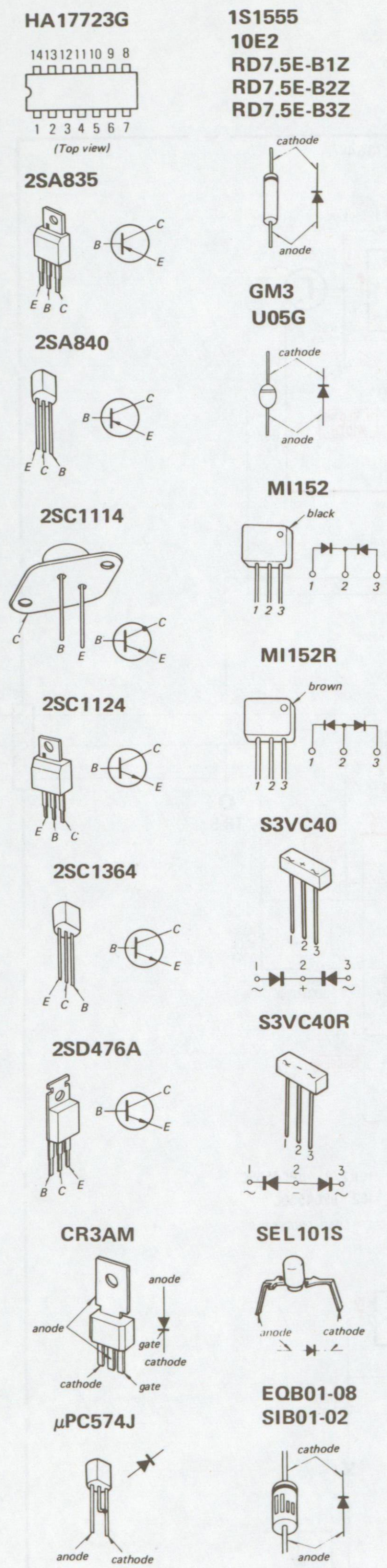


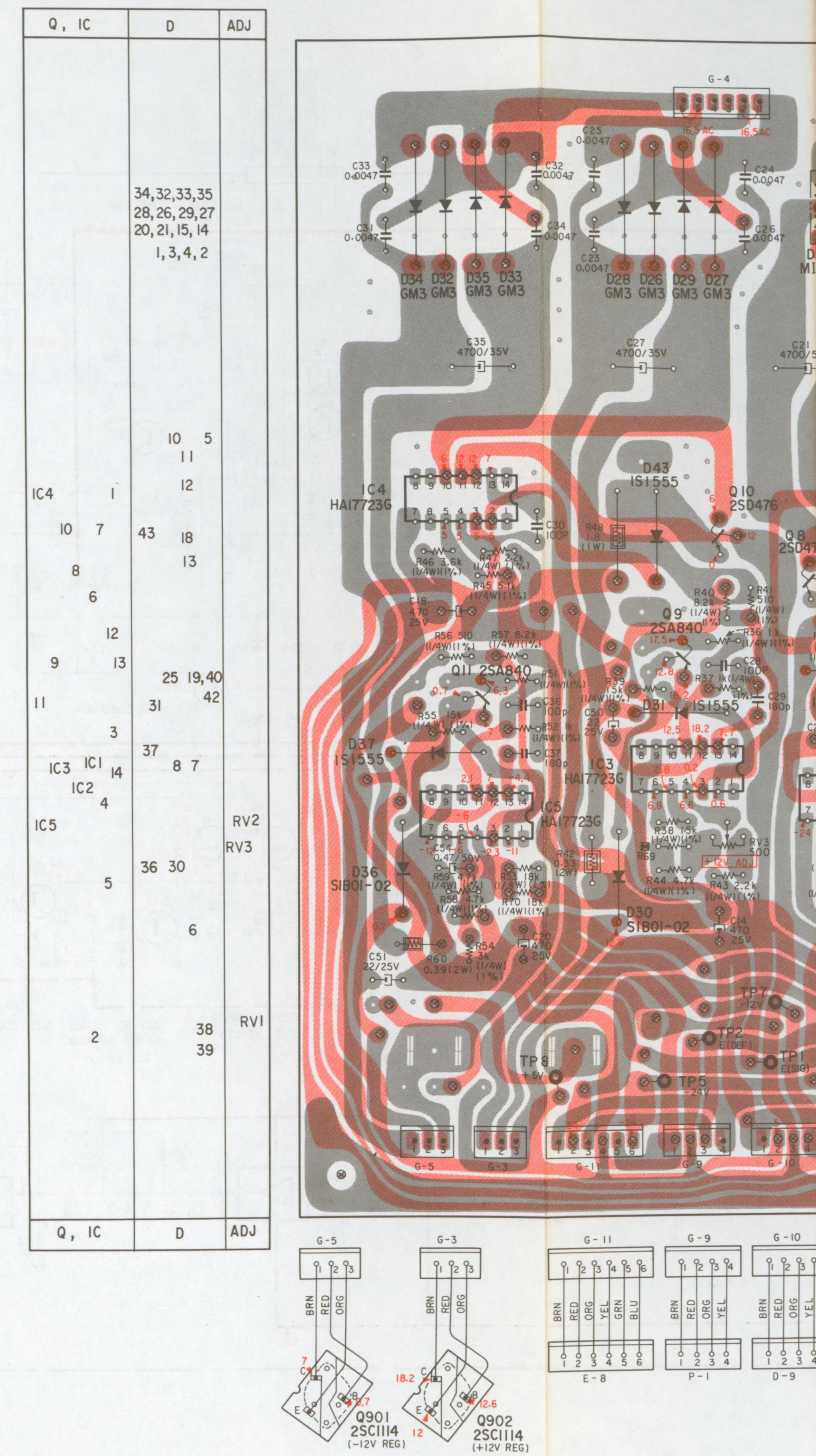
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

F AND G BOARDS





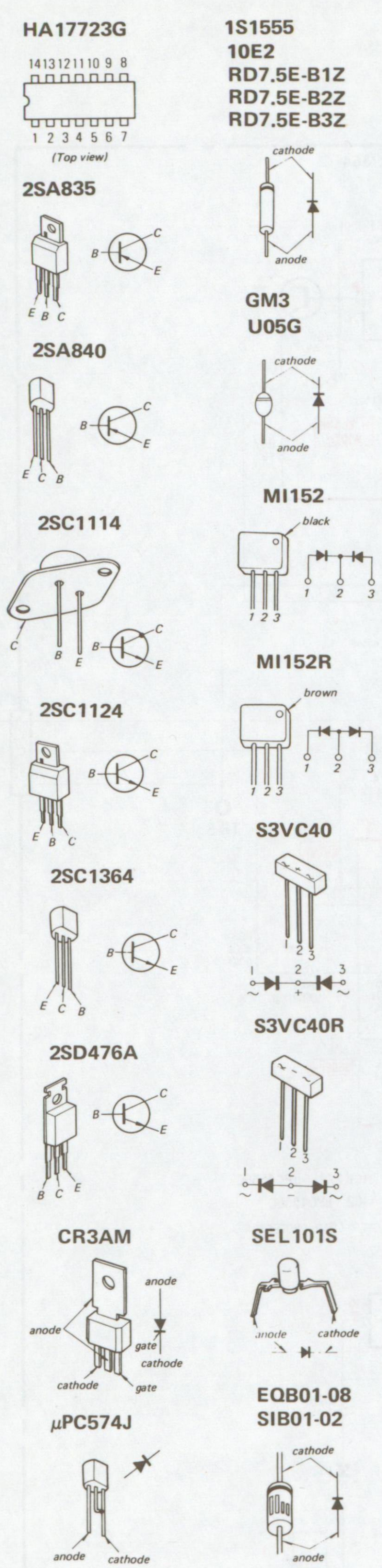


Note: • Reference numbers on the F board are of the 500 series. (i.e., R1:R501, C1:C501, etc.)

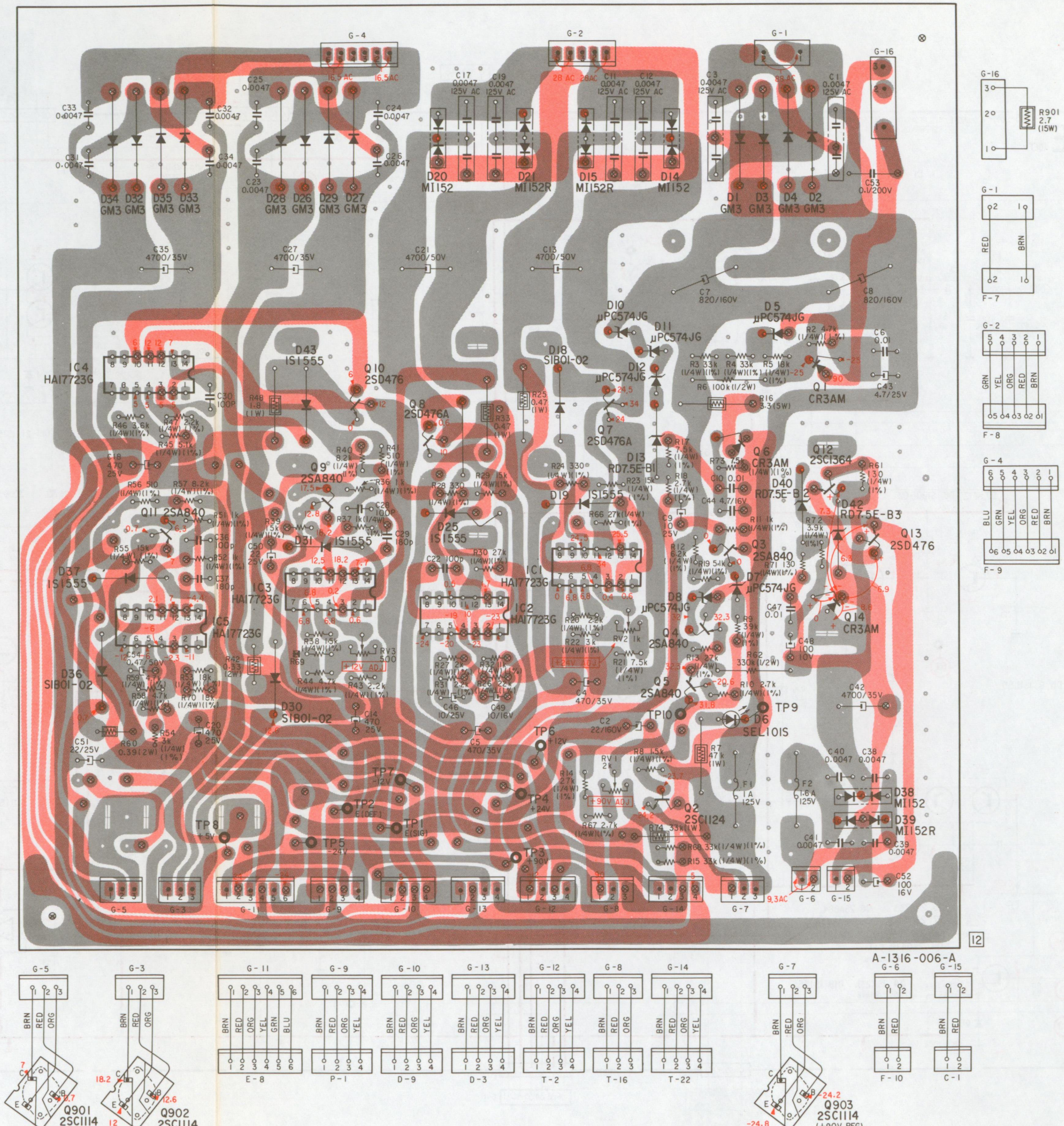
• See page 6-1 for other notes.

Note: • Reference numbers on the G board are of the 600 series. (i.e., R1:R601, C1:C601, etc.)

• See page 6-1 for other notes.



Q, IC	D	ADJ
	34, 32, 33, 35 28, 26, 29, 27 20, 21, 15, 14 1, 3, 4, 2	
	10 5 11 12	
IC4 1 10 7	43 18 13	
8 6 12 9 13 11	25 19, 40 42 31	
3 IC3 IC1 14 IC2 4 IC5	37 8 7	RV2 RV3
5	36 30 6	
2	38 39	RV1
Q, IC	D	ADJ



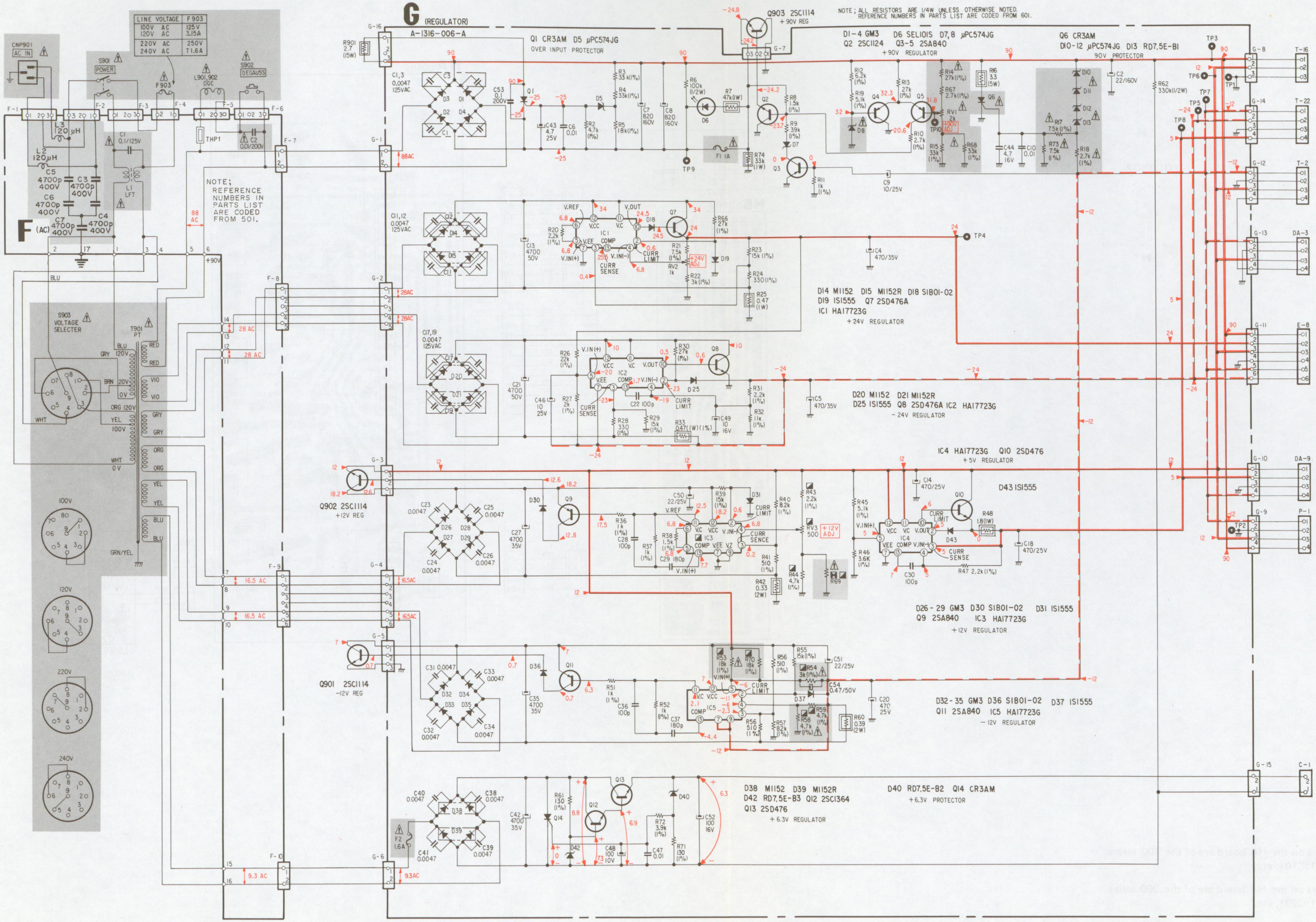
Note: • Reference numbers on the G board are of the 600 series. (i.e., R1:R601, C1:C601, etc.)

• See page 6-1 for other notes.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

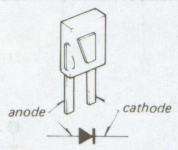
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

F AND G BOARDS

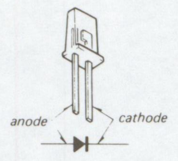


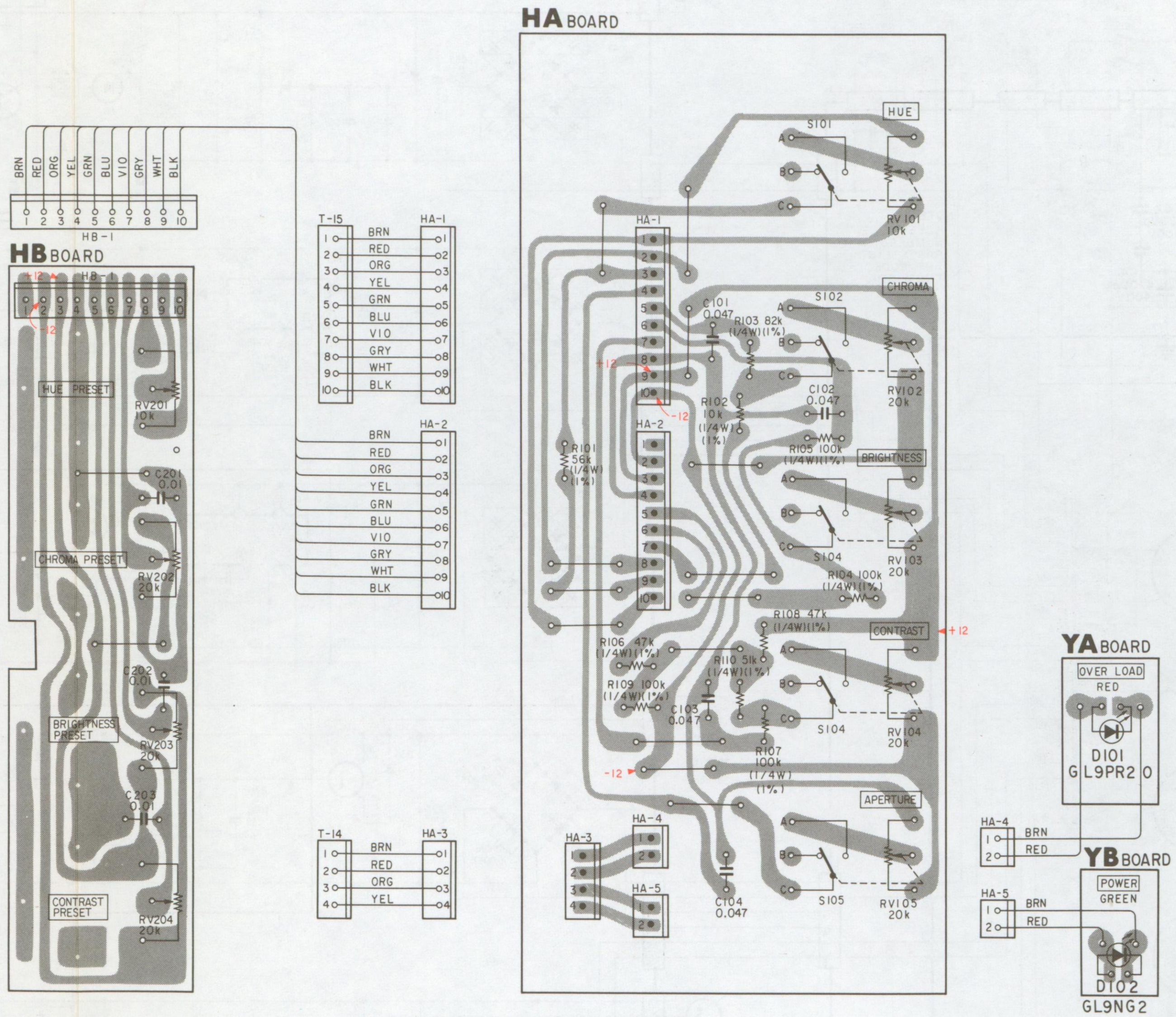
HA, HB, YA AND YB BOARDS

GL9PR20



GL9NG2



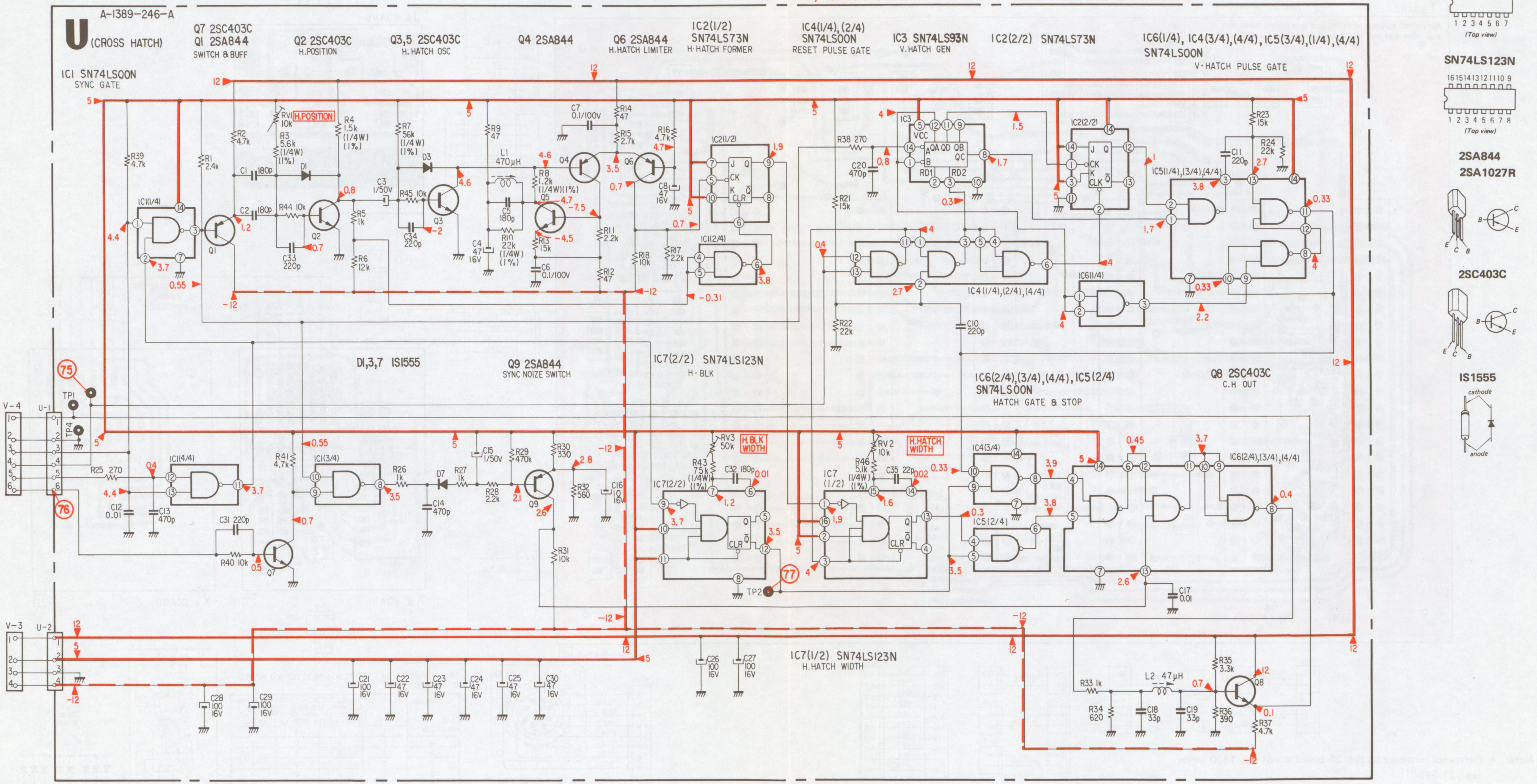


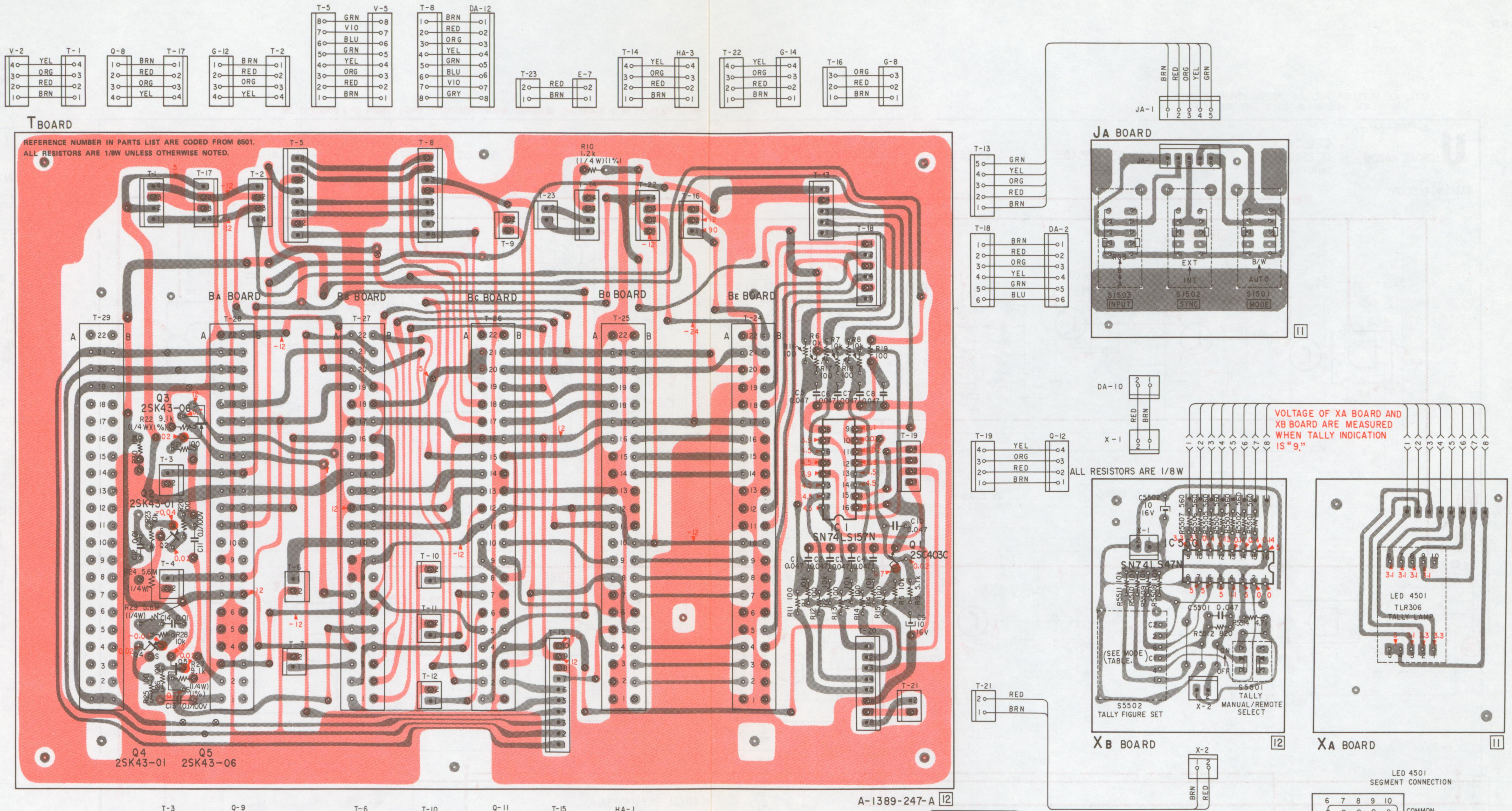
Note:
- Reference numbers on the HA board are of the 100 series. (i.e., R1:R101, C1:C101, etc.)
- Reference numbers on the HB board are of the 200 series. (i.e., R1:R201, C1:C201, etc.)
- See page 6-1 for other notes.

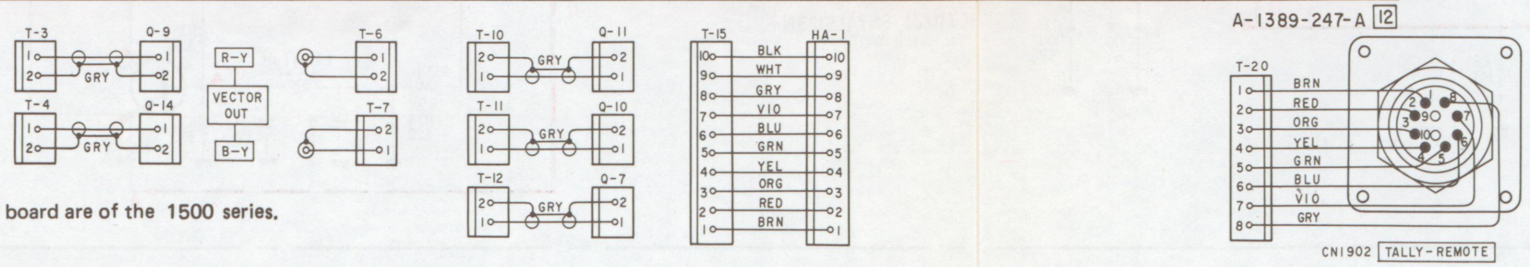
U BOARD

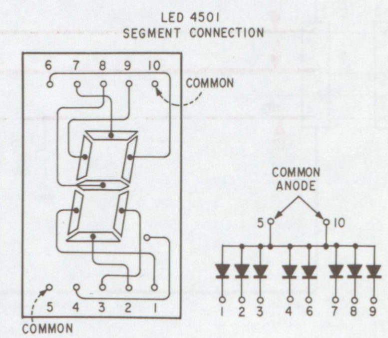
NOTE; ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 401.

NOTE; VOLTAGES OF U BOARD ARE MEASURED WHEN CROSSHATCH SWITH (S6004 OF D BOARD) IS ON.









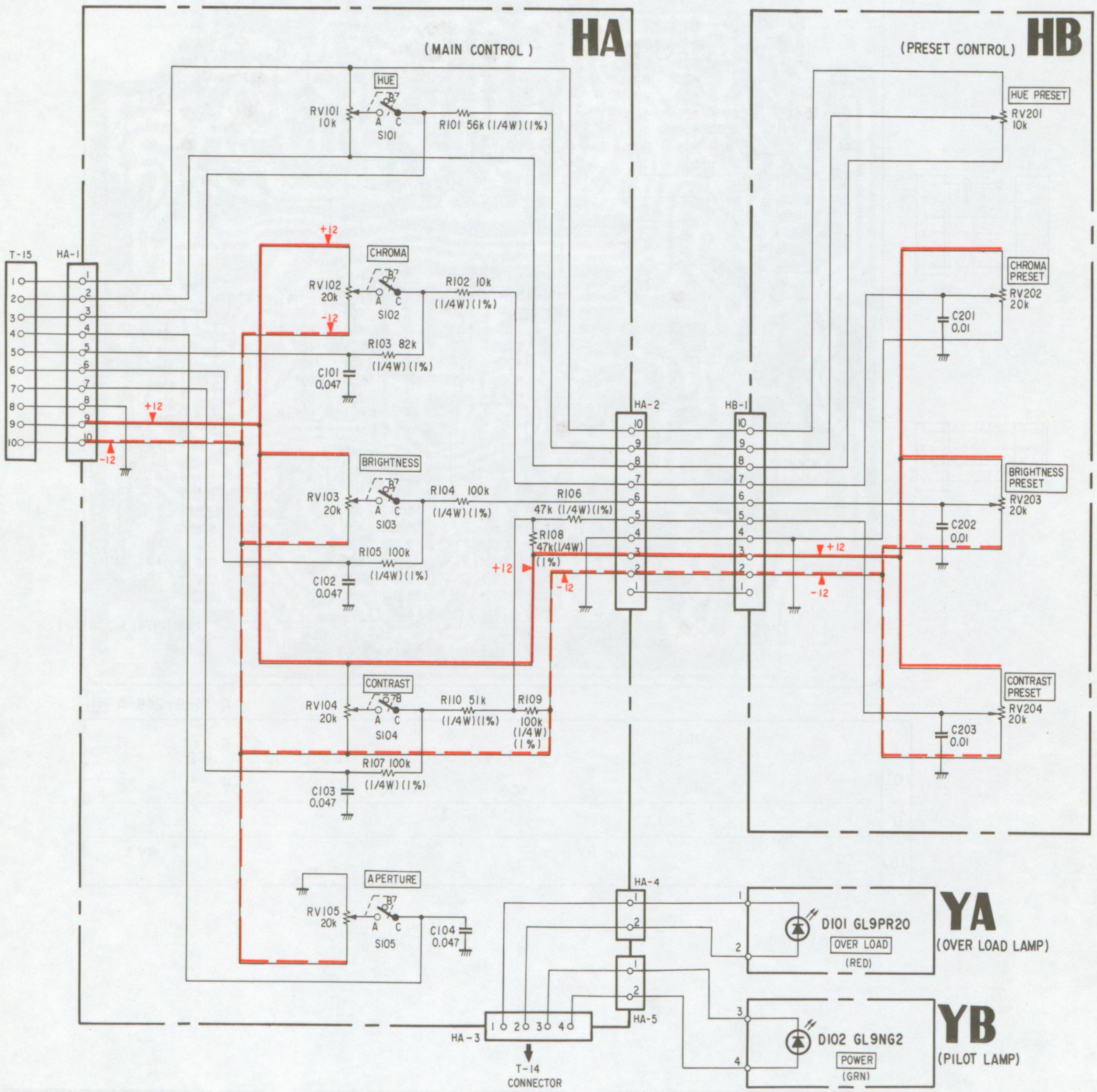
TALLY FIGURE SET SWITCH (S5502) OF XB BOARD
MODE TABLE

TERMINAL / DIAL INDICATION	MODE 0: CONNECTED WITH C1 TERMINAL AND DISCONNECTED WITH C2 TERMINAL 1: CONNECTED WITH C2 TERMINAL AND DISCONNECTED WITH C1 TERMINAL			
	1	2	4	8
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1

Note:

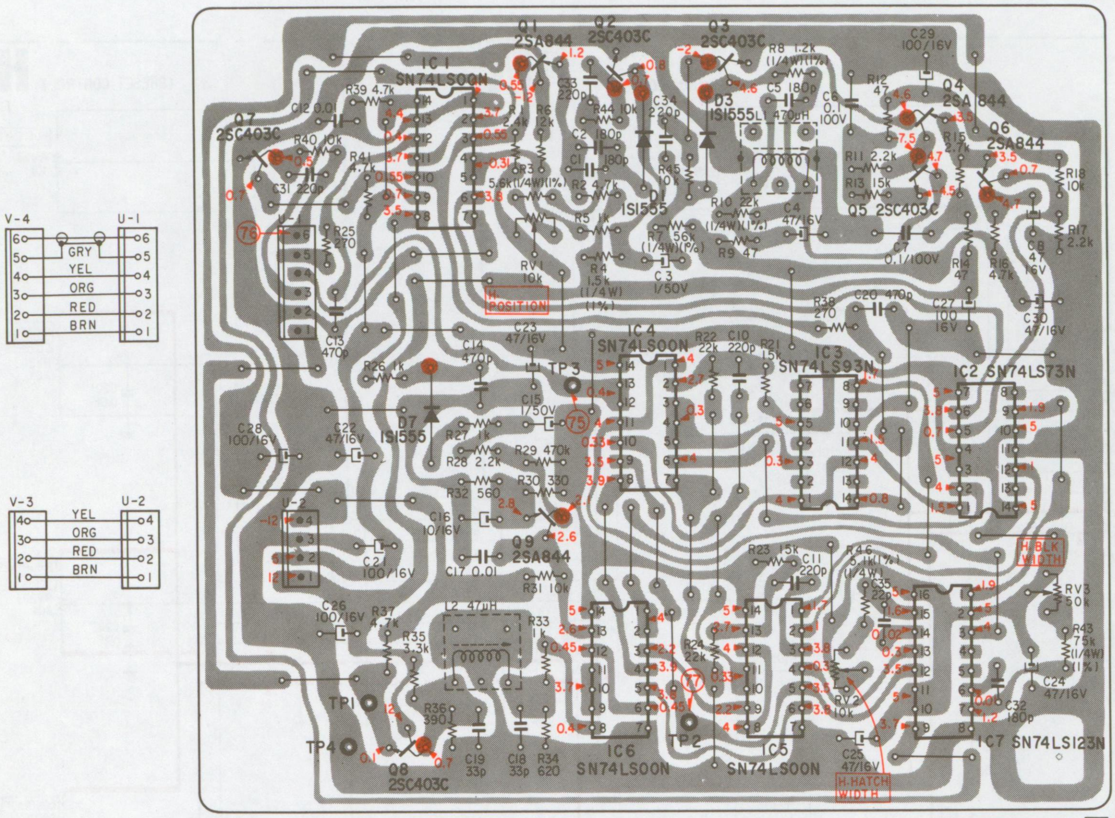
- Reference numbers on the JA board are of the 1500 series. (i.e., S1:S1501)
- Reference numbers on the T board are of the 6500 series. (i.e., R1:R6501, C1:C6501, etc.)
- Reference numbers on the XA board are of the 4500 series. (i.e., LED1:LED4501)
- Reference numbers on the XB board are of the 5500 series. (i.e., R1:R5501, C1:C5501, etc.)
- See page 6-1 for other notes.

HA, HB, YA AND YB BOARDS



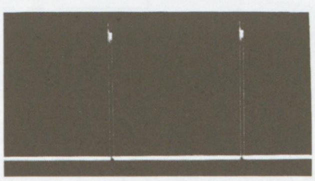
U BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 401.
VOLTAGES OF U BOARD ARE MEASURED WHEN CROSS HATCH SWITCH (S6004 OF D BOARD) IS ON.

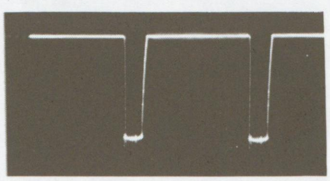


A-1389-246-A [II]

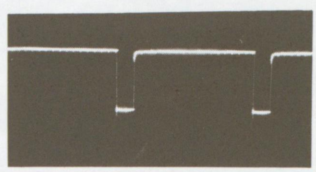
IC Q	7 IC1 1 2 3 IC4 IC3 5 4 6 IC2 8 9 IC6 IC5 IC7
D	7 1 3
ADJ	RV1 RV2 RV3



75 5.4 Vp-p (V)



76 8.2 Vp-p (H)



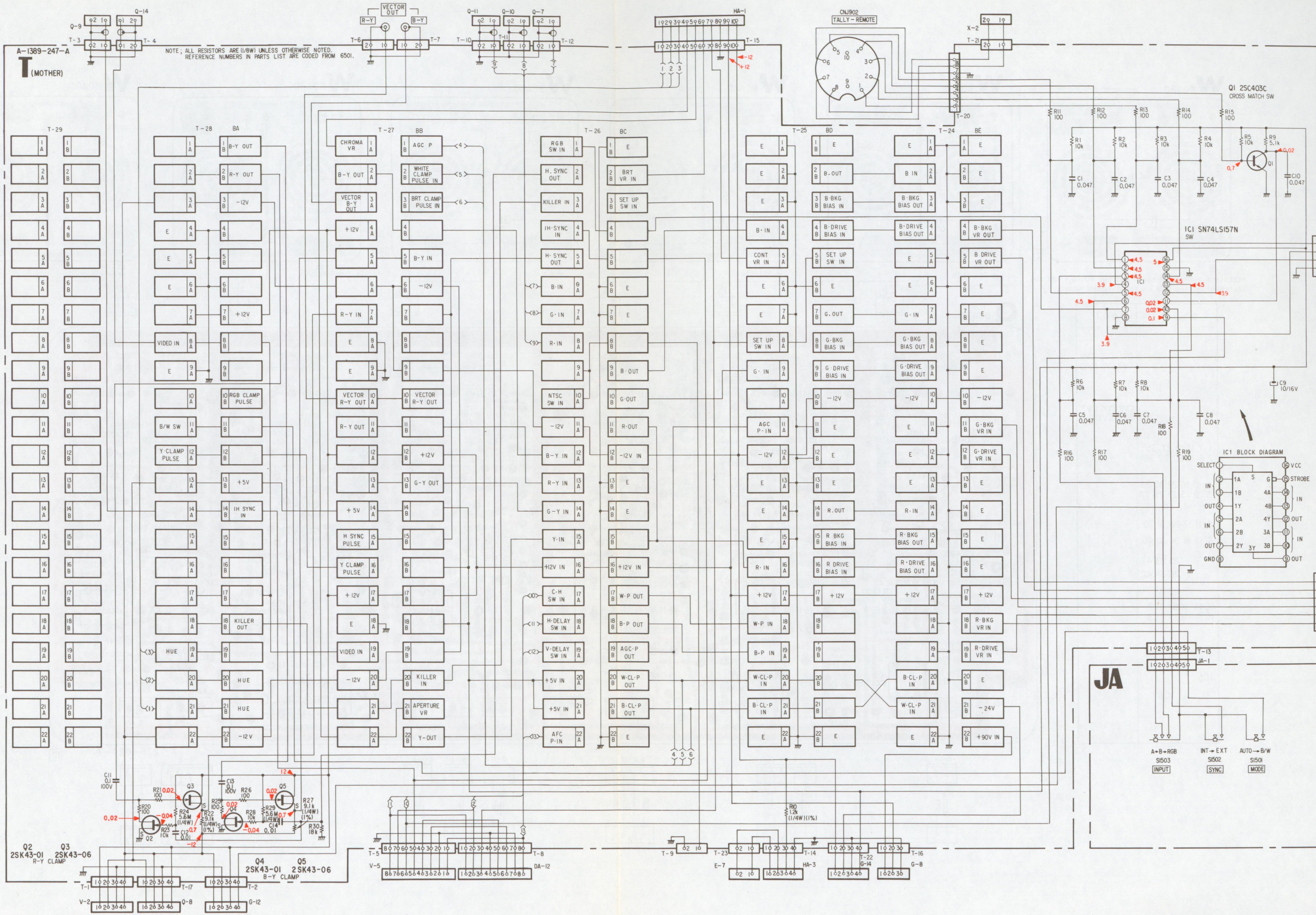
77 5 Vp-p (H)
C.H. switch (S4 on D board) on

– U Board –

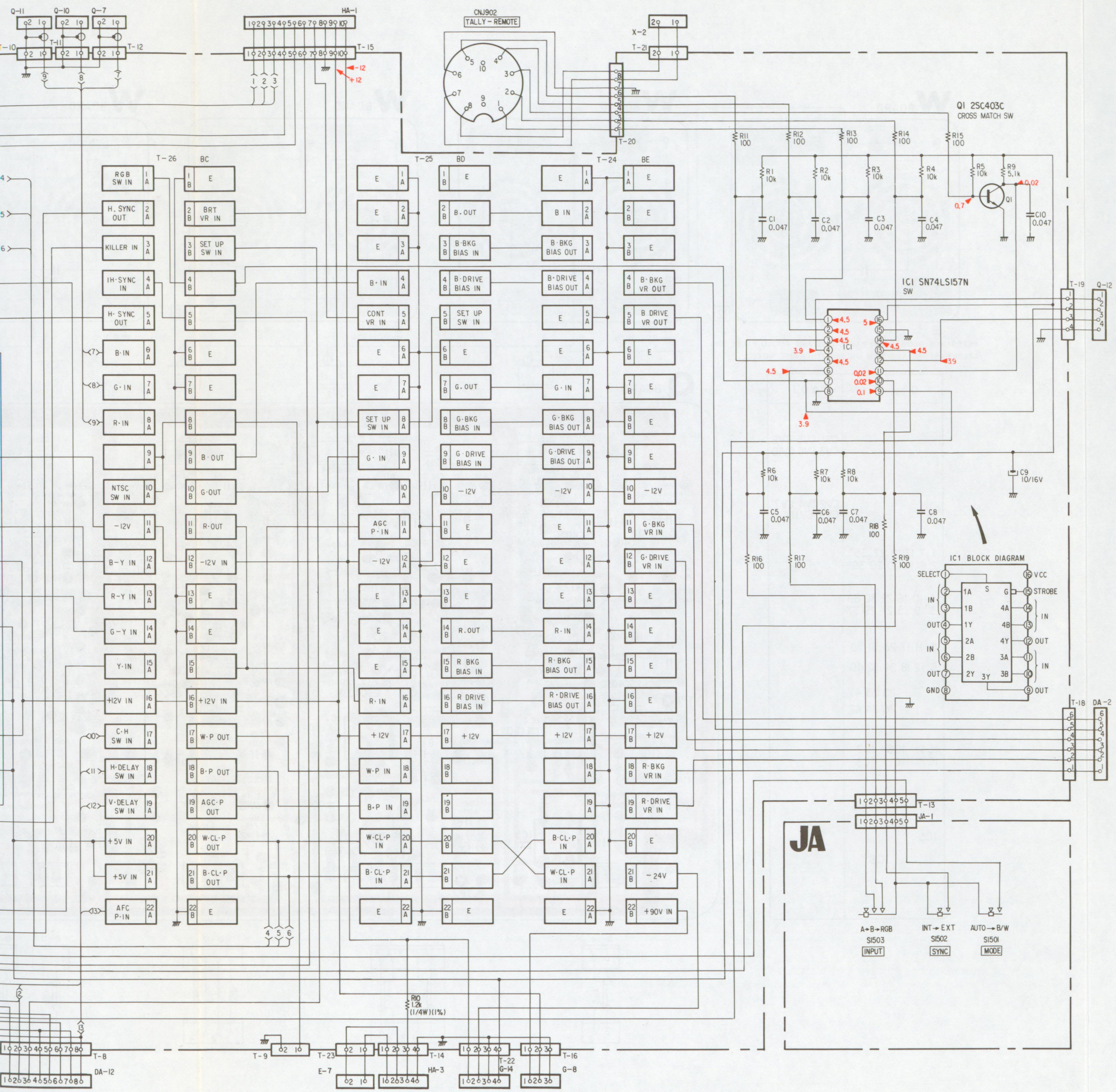
Note: • Reference numbers on the U board are of the 400 series. (i.e., R1:R401, C1:C401, etc.)

• See page 6-1 for other notes.

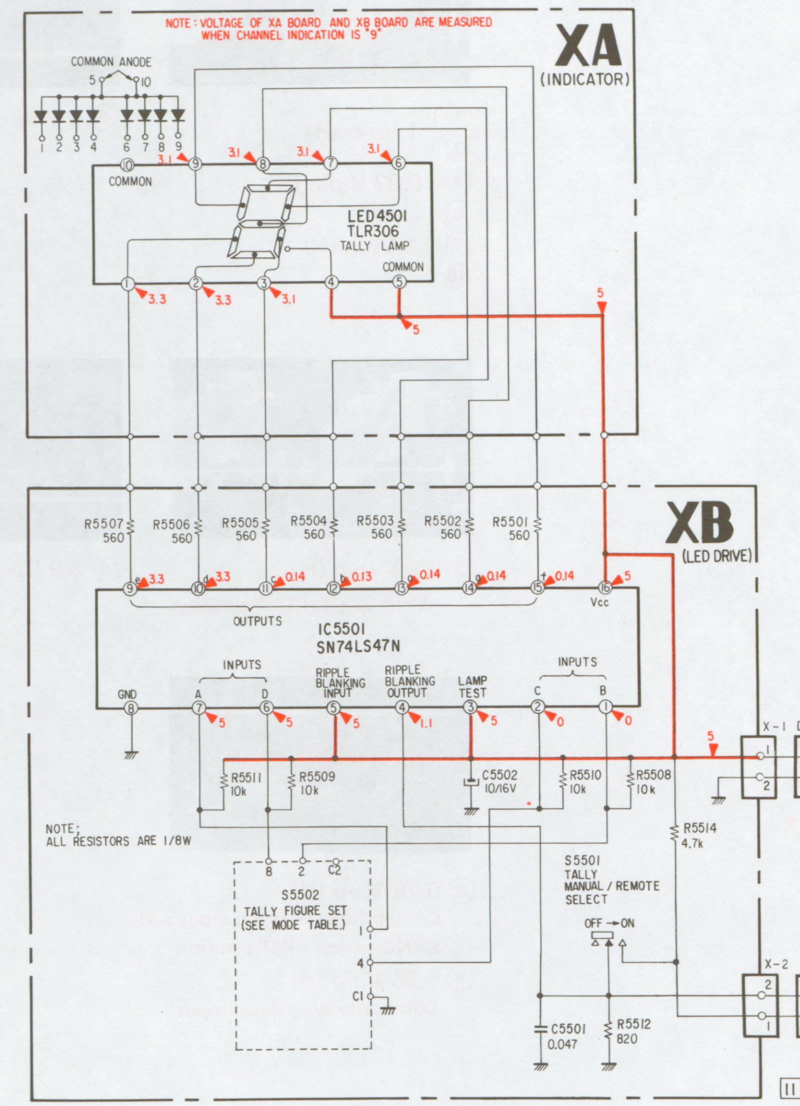
JA, T, XA, XB JA, T, XA, XB

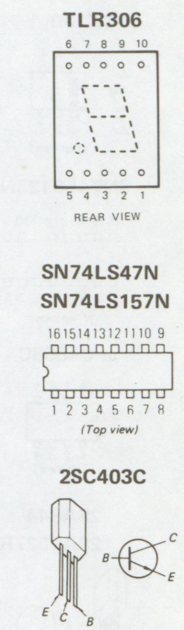


JA, T, XA, XB



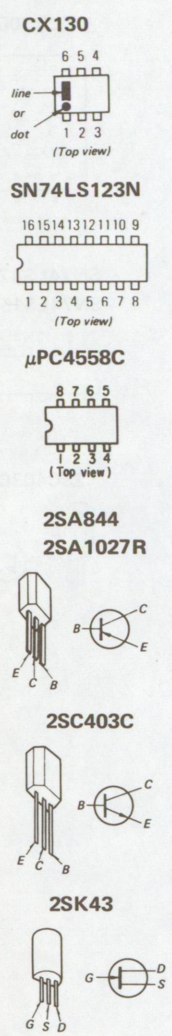
JA, T, XA, XB

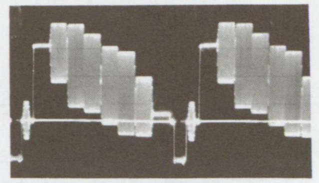




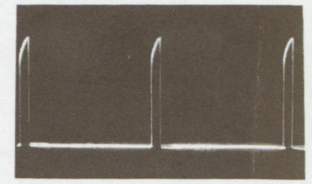
Q, W Q, W

Q AND W BOARDS

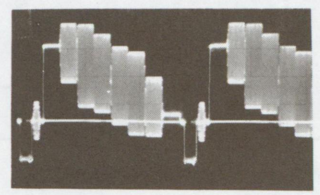




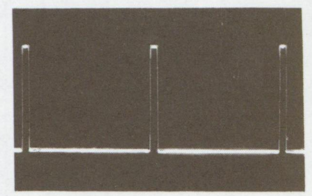
① ② } 1 Vp-p (H)
⑦ 0.92 V p-p (H)
⑧ ⑨ ⑩ } 1 Vp-p (H)



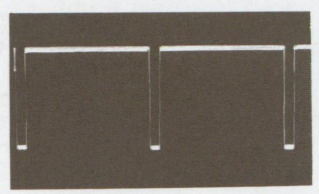
⑤ 4 Vp-p (H)



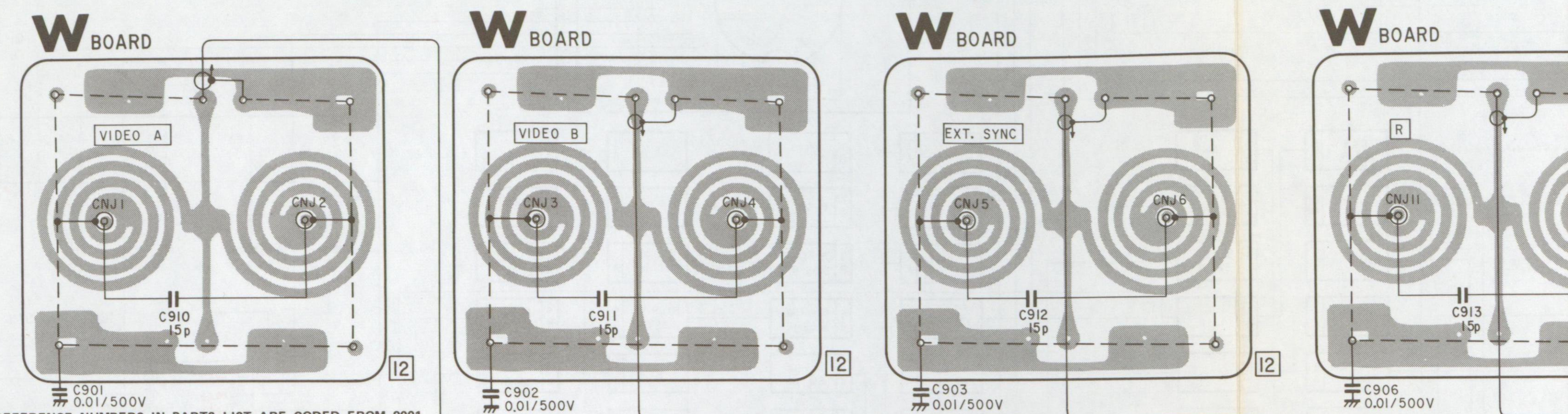
③ 0.92 Vp-p (H)
SYNC switch : EXT position



⑥ 3.9 Vp-p (H)

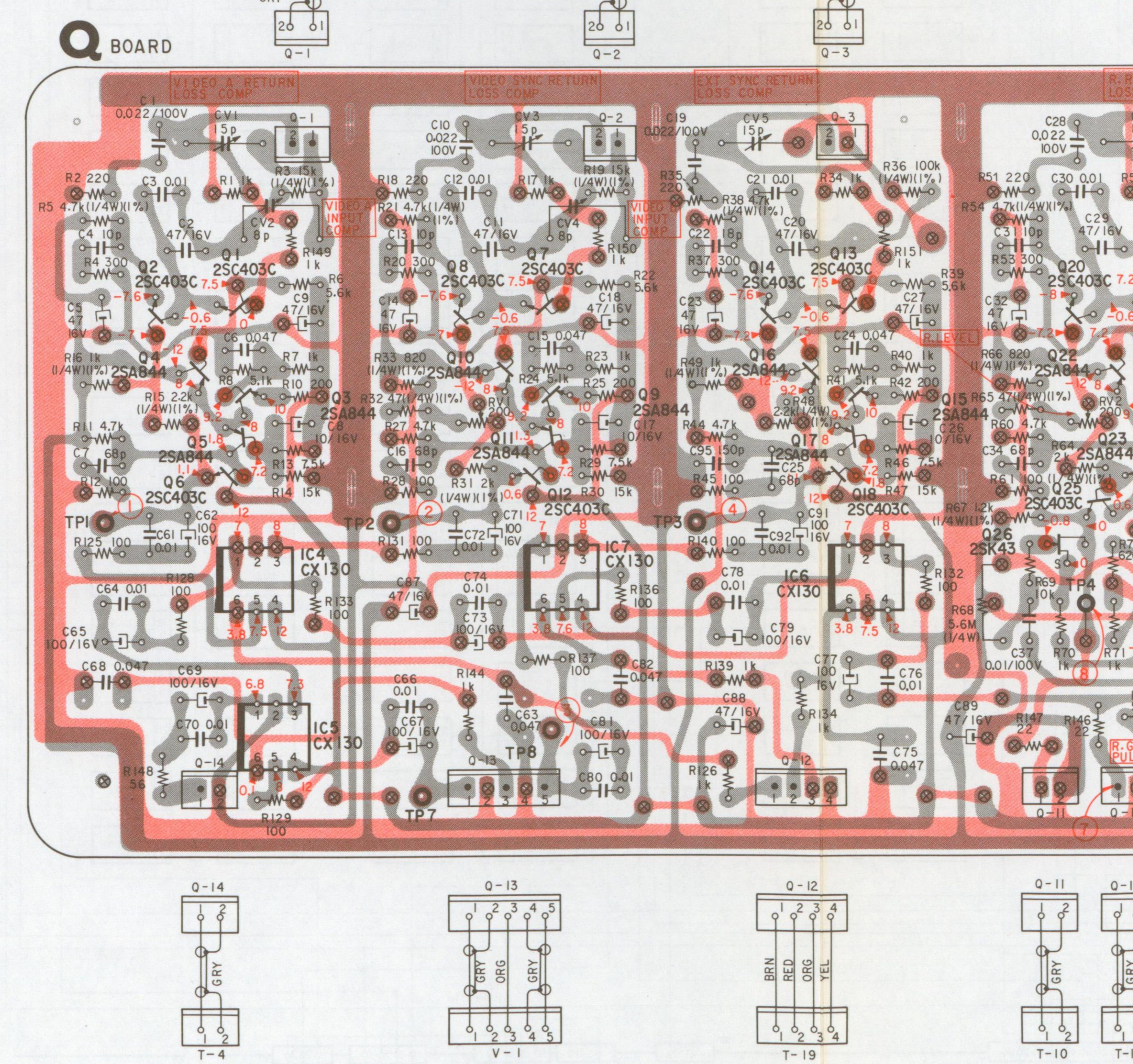


③ 0.76 Vp-p (H)
Composite sync signal input and
SYNC switch : INT position
④ 0.96 Vp-p (H)
Composite sync signal input



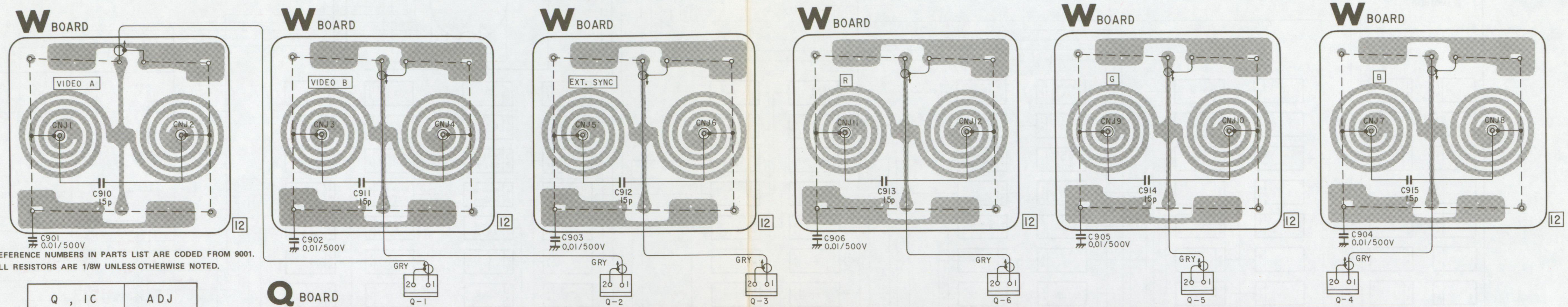
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 9001.
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.

Q , IC	ADJ
	CV1 CV5 CV8 CV3 CV6 CV10
	CV2 CV4 CV7 CV9 CV11
1 7 13 19 27 35 2 8 14 20 28 36	
4 10 16 22 30 38 3 9 15 21 29 37	
5 11 17 23 31 39	
6 12 18 24 32 40	
25 33 41 26 34 42	
IC4 IC6 IC2 IC7 IC1 IC3	
43	
IC5 IC8	



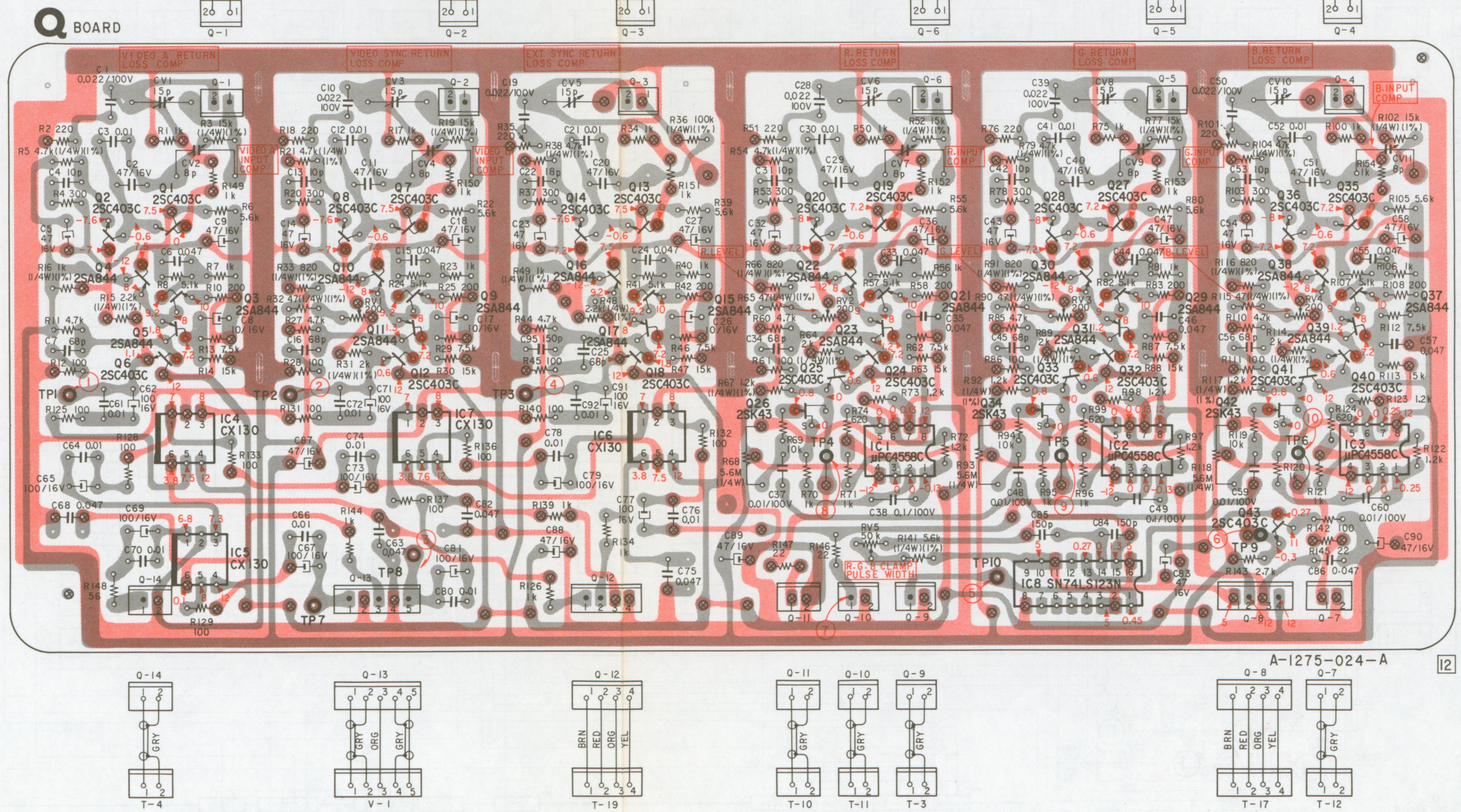
Note: • Reference numbers on the P board are of the 9000 series. (i.e., R1:R9001, C1:C9001, etc.)

• See page 6-1 for other notes.

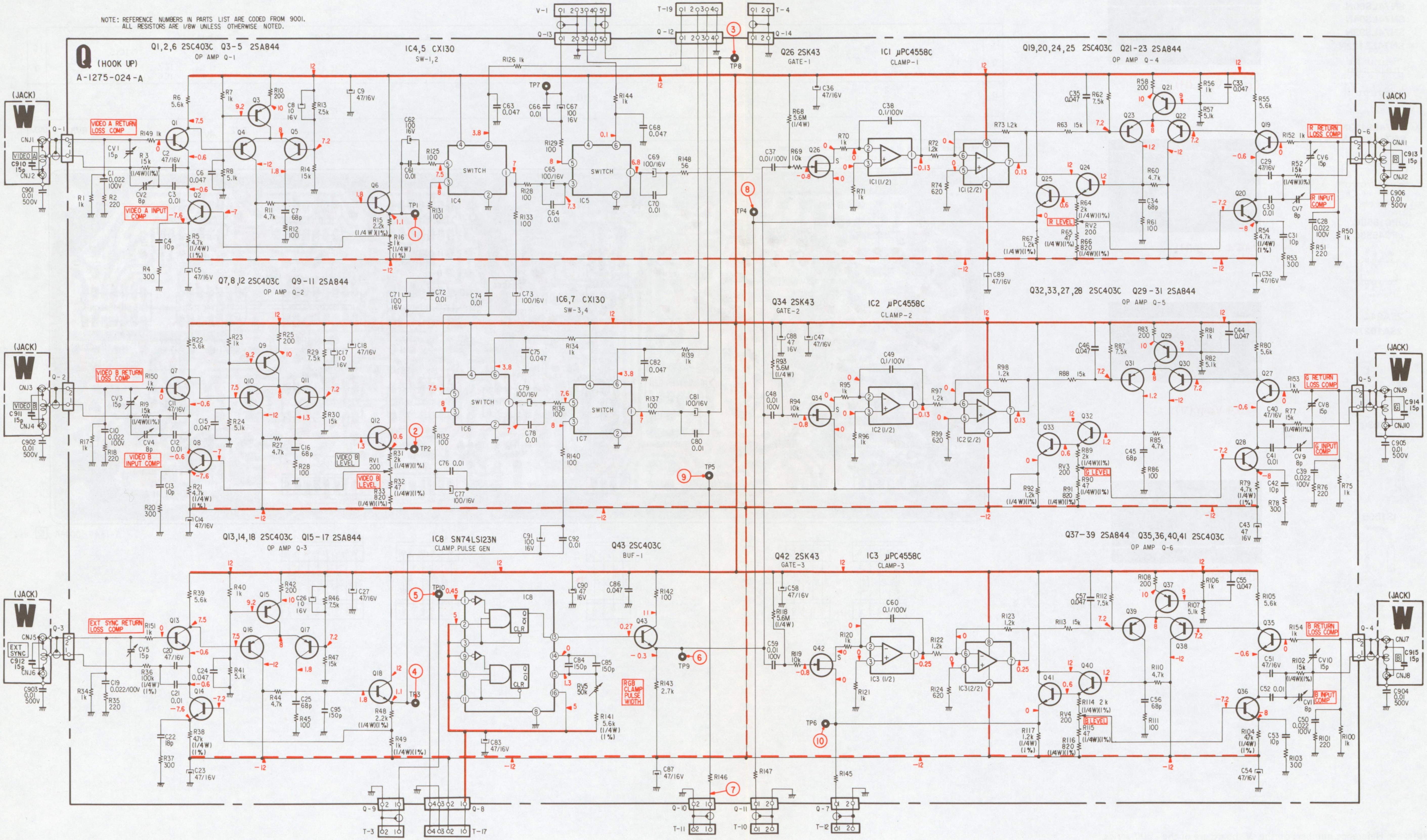


REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 9001.
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.

Q , IC	ADJ
	CV1 CV5 CV8 CV3 CV6 CV10
	CV2 CV4 CV7 CV9 CV11
1 7 13 19 27 35 2 8 14 20 28 36	
4 10 16 22 30 38 3 9 15 21 29 37	
5 11 17 23 31 39	
6 12 18 24 32 40	
25 33 41 26 34 42	
IC4 IC6 IC2 IC7 IC1 IC3	
43	
IC5	
IC8	

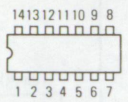


Q AND W BOARDS



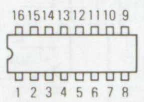
V BOARD

SN74LS00N
SN74LS04N
SN74LS93N
SN74LS122N



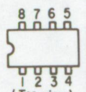
(Top view)

SN74LS123N
SN74LS279N



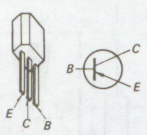
(Top view)

μPC1555C
μPC4558C

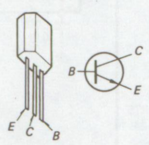


(Top view)

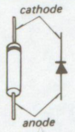
2SA844
2SA1027R

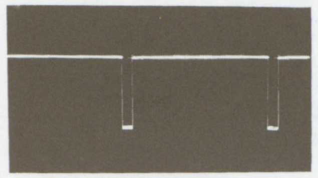


2SC403C

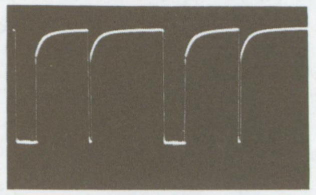


IS1555

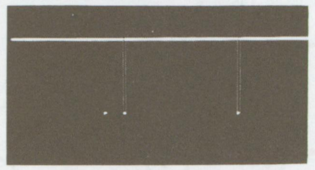




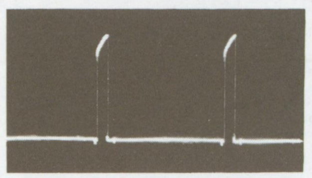
⑱ 5.4 Vp-p (H)



⑲ 4.4 Vp-p (H)



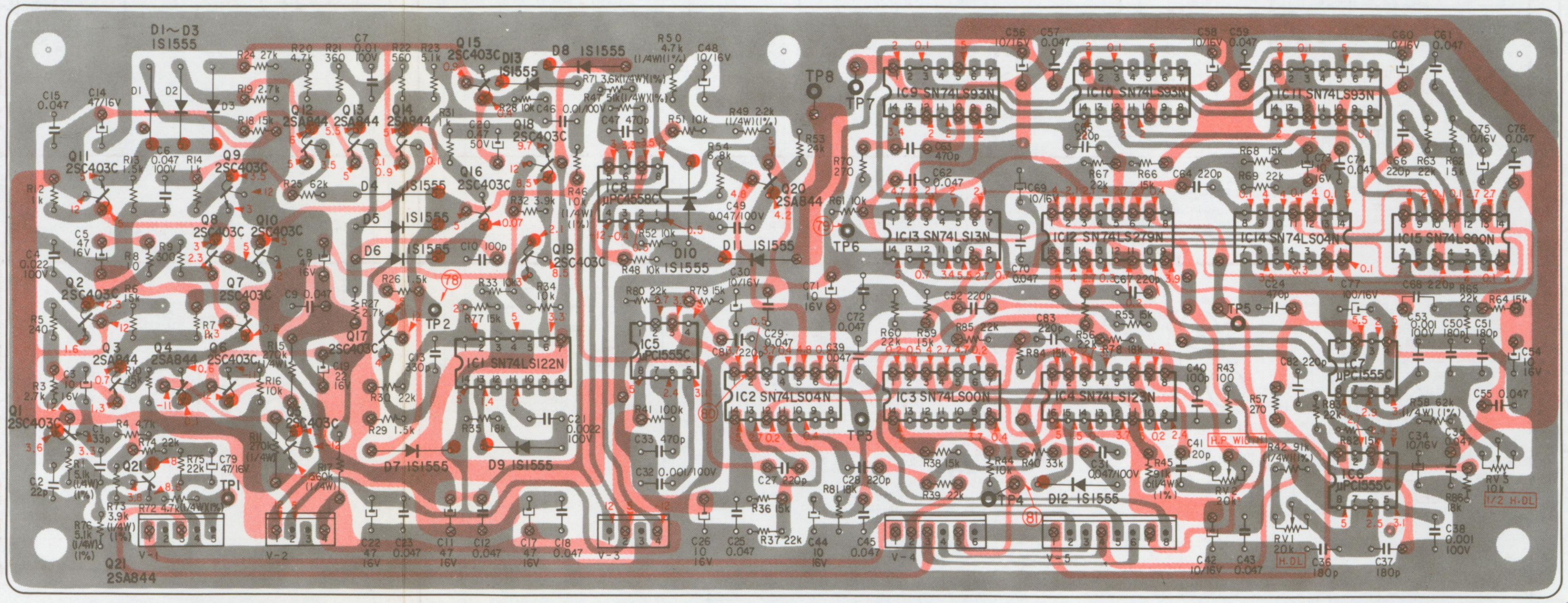
⑳ 5.4 Vp-p (V)



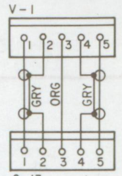
㉑ 4 Vp-p (H)

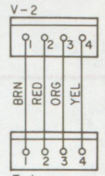
IC	IC8, IC5, IC2, IC1, IC9, IC13, IC3, IC10, IC12, IC4, IC11, IC14, IC7, IC6, IC15
Q	11, 2, 1, 3, 4, 21, 9, 8, 6, 7, 10, 5, 12, 13, 14, 17, 15, 16, 18, 19, 20
D	1 2 3, 4 5 6 7, 13, 9, 8, 10, 11, 12
ADJ	RV2, RV1, RV3

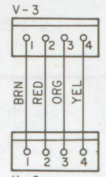
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 301.
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.

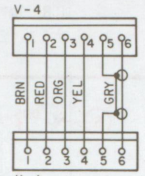


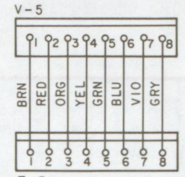
A-1347-001-A [12]





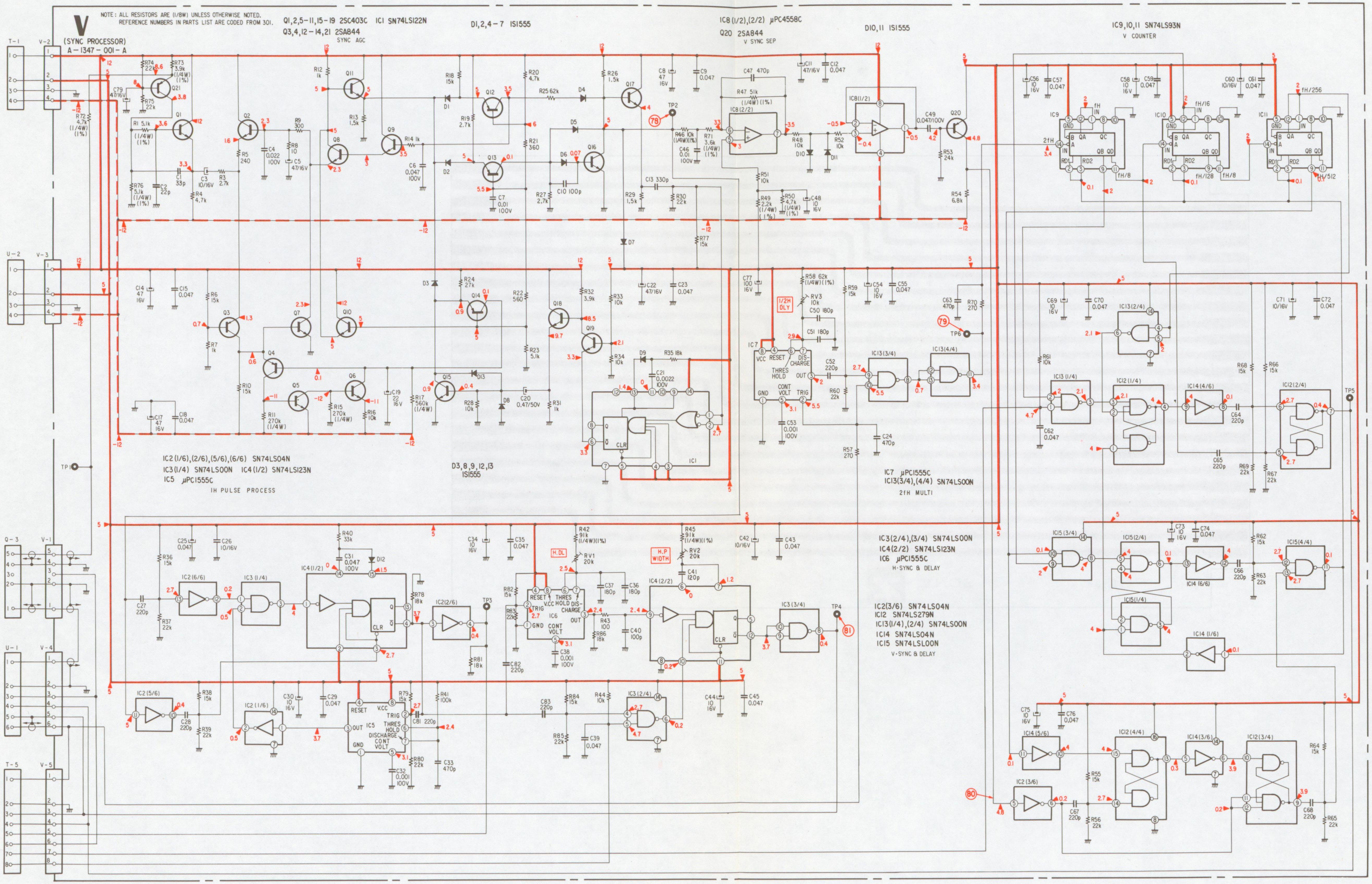




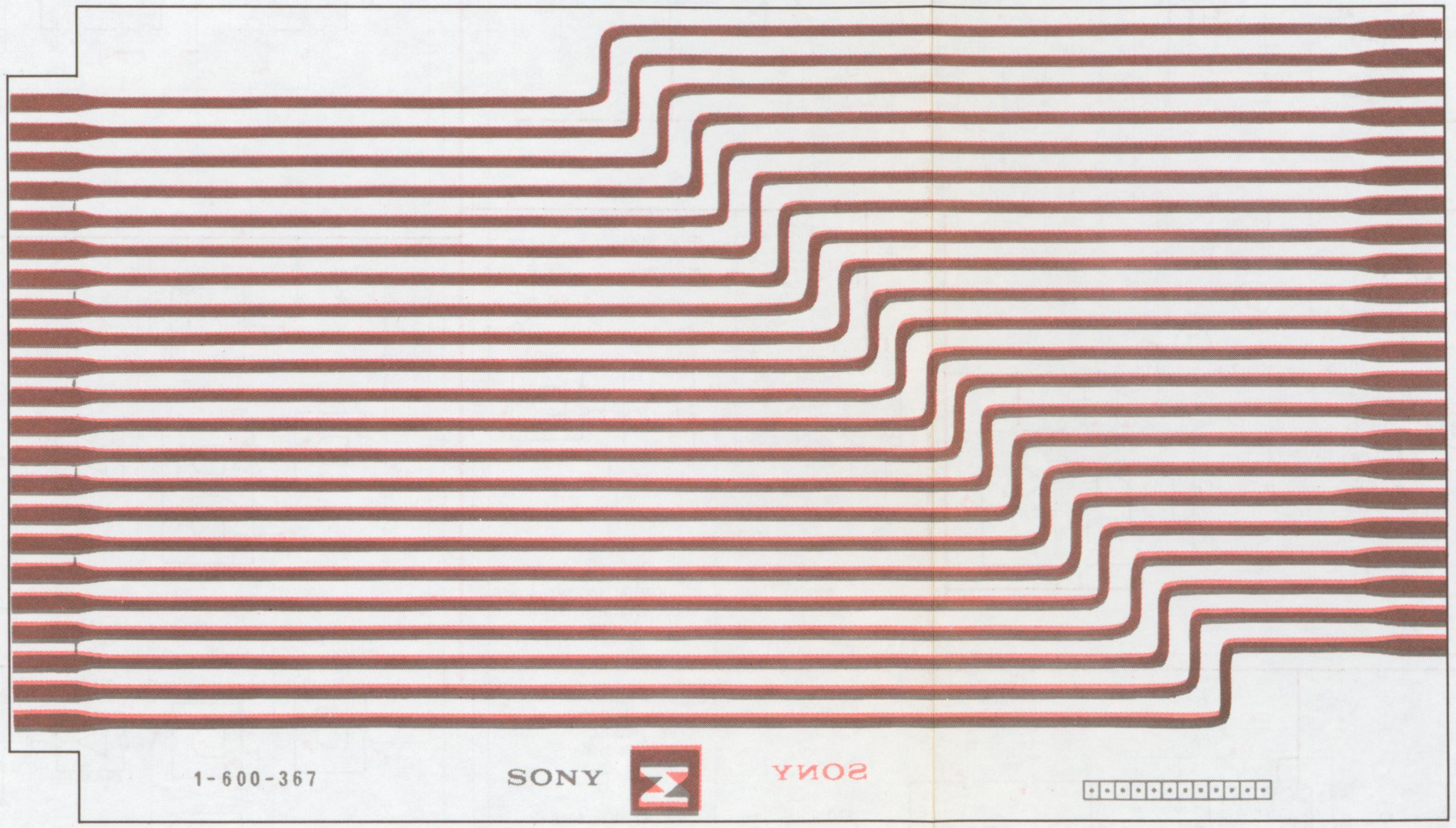


Note:
- Reference numbers on the V board are of the 300 series. (i.e., R1:R301, C1:C301, etc.)
- See page 6-1 for other notes.

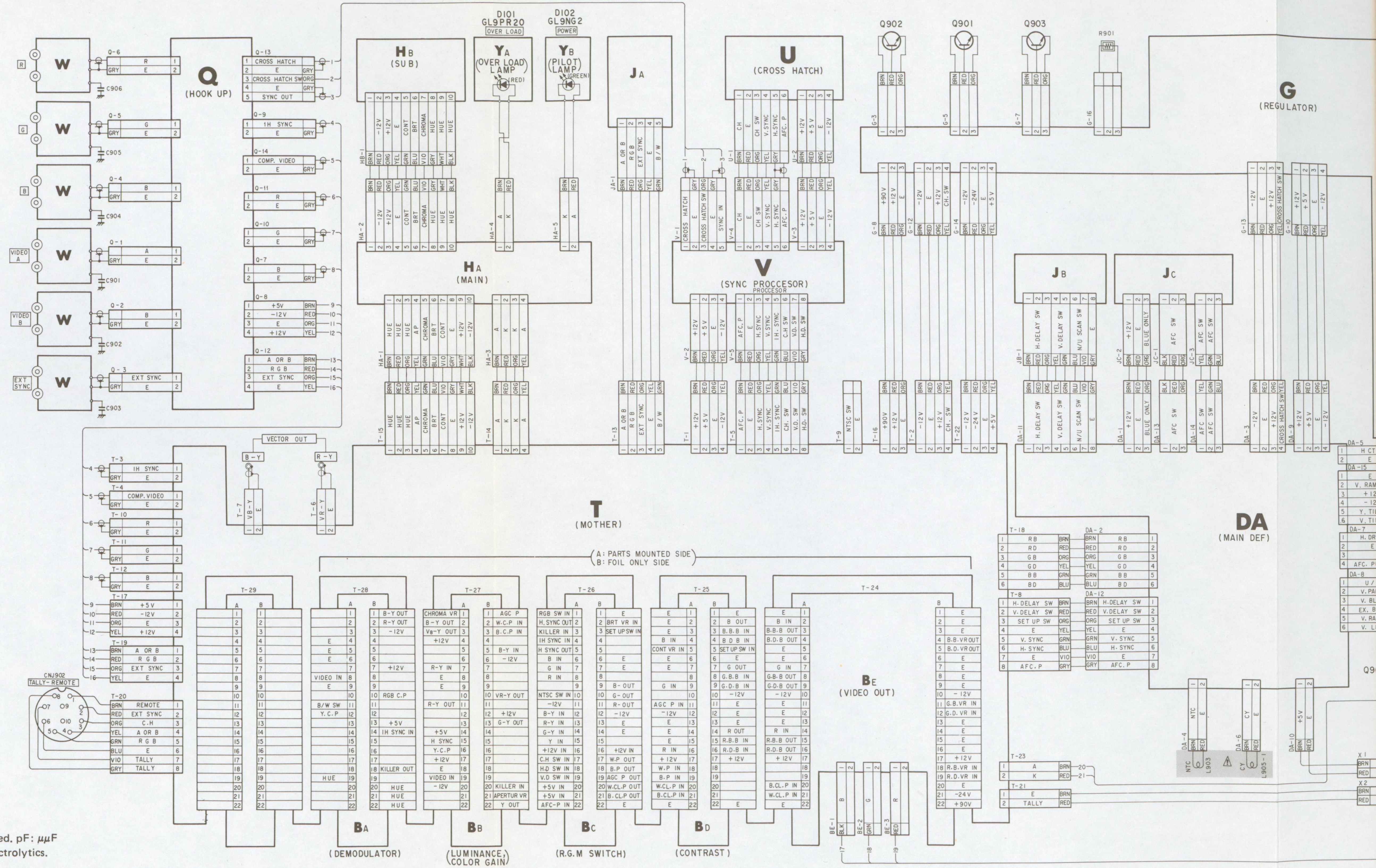
V BOARD


V
(SYNC PROCESSOR)
A-1347-001-A
NOTE: ALL RESISTORS ARE (1/8W) UNLESS OTHERWISE NOTED.
REFERENCE NUMBERS IN PARTS LIST ARE CODED FROM 301.
Q1,2,5-11,15-19 2SC403C IC1 SN74LS122N
Q3,4,12-14,21 2SA844
SYNC AGC
D1,2,4-7 IS1555
IC8(1/2),(2/2) μPC4558C
Q20 2SA844
V SYNC SEP
D10,11 IS1555
IC9,10,11 SN74LS93N
V COUNTER
IC2(1/6),(2/6),(5/6),(6/6) SN74LS04N
IC3(1/4) SN74LS00N IC4(1/2) SN74LS123N
IC5 μPC1555C
1H PULSE PROCESS
D3,8,9,12,13
IS1555
IC7 μPC1555C
IC13(3/4),(4/4) SN74LS00N
2fH MULTI
IC3(2/4),(3/4) SN74LS00N
IC4(2/2) SN74LS123N
IC6 μPC1555C
H-SYNC & DELAY
IC2(3/6) SN74LS04N
IC12 SN74LS279N
IC13(1/4),(2/4) SN74LS00N
IC14 SN74LS04N
IC15 SN74LS00N
V-SYNC & DELAY
H.DL
H.P WIDTH
1/2H DLY
TP1
TP2
TP4
TP5
TP6

Z BOARD



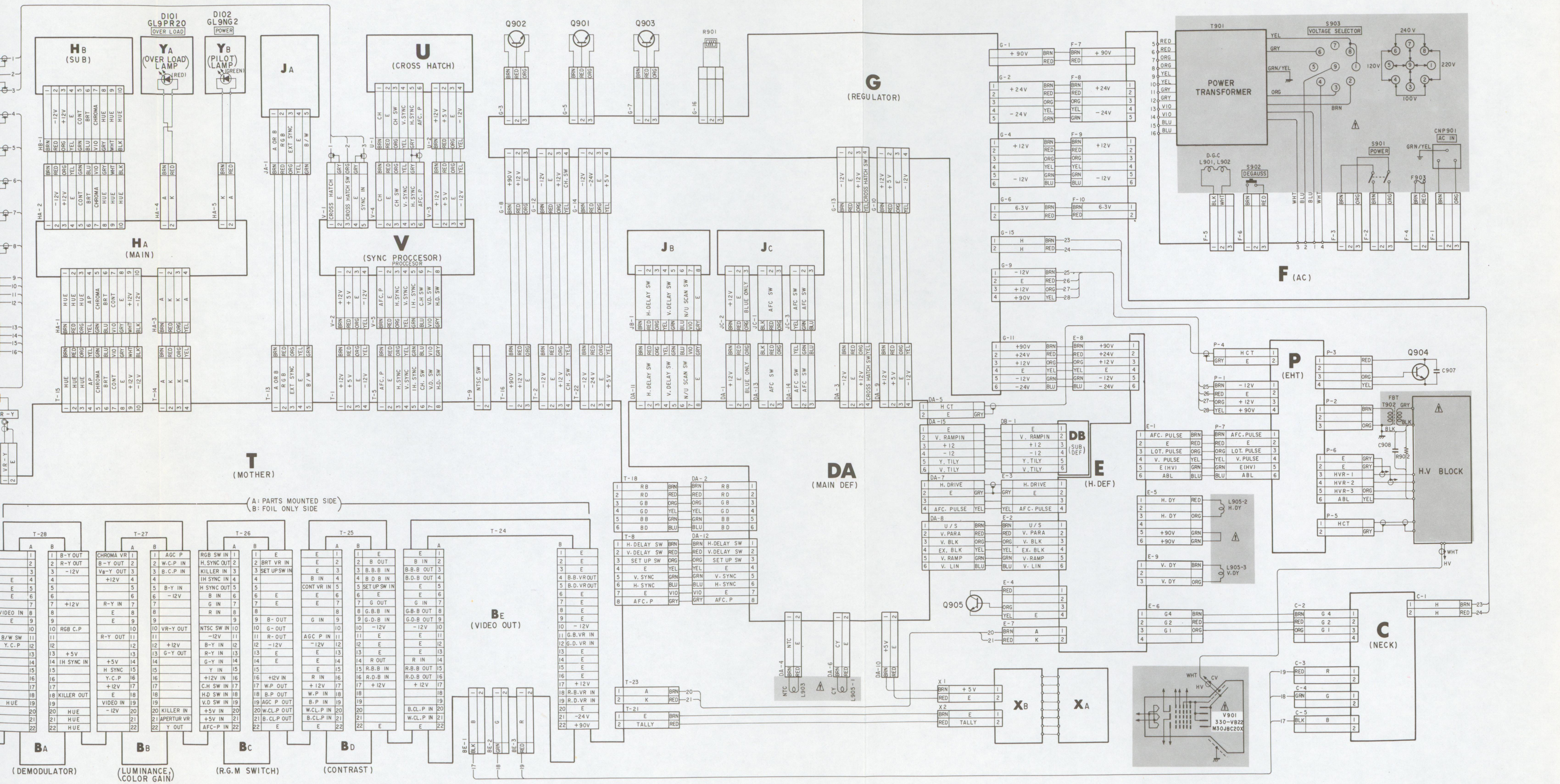
6-2. FRAME WIRING DIAGRAM



Note:
- All capacitors are in μF unless otherwise noted. pF: $\mu\mu$F 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω; MΩ : 1000 kΩ
- ⏚ : direct connection to points marked ⏚ on the chassis
- ▭ : panel designation.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



by shading and mark ⚠ ...ce only with part number

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 7
EXPLODED VIEWS

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

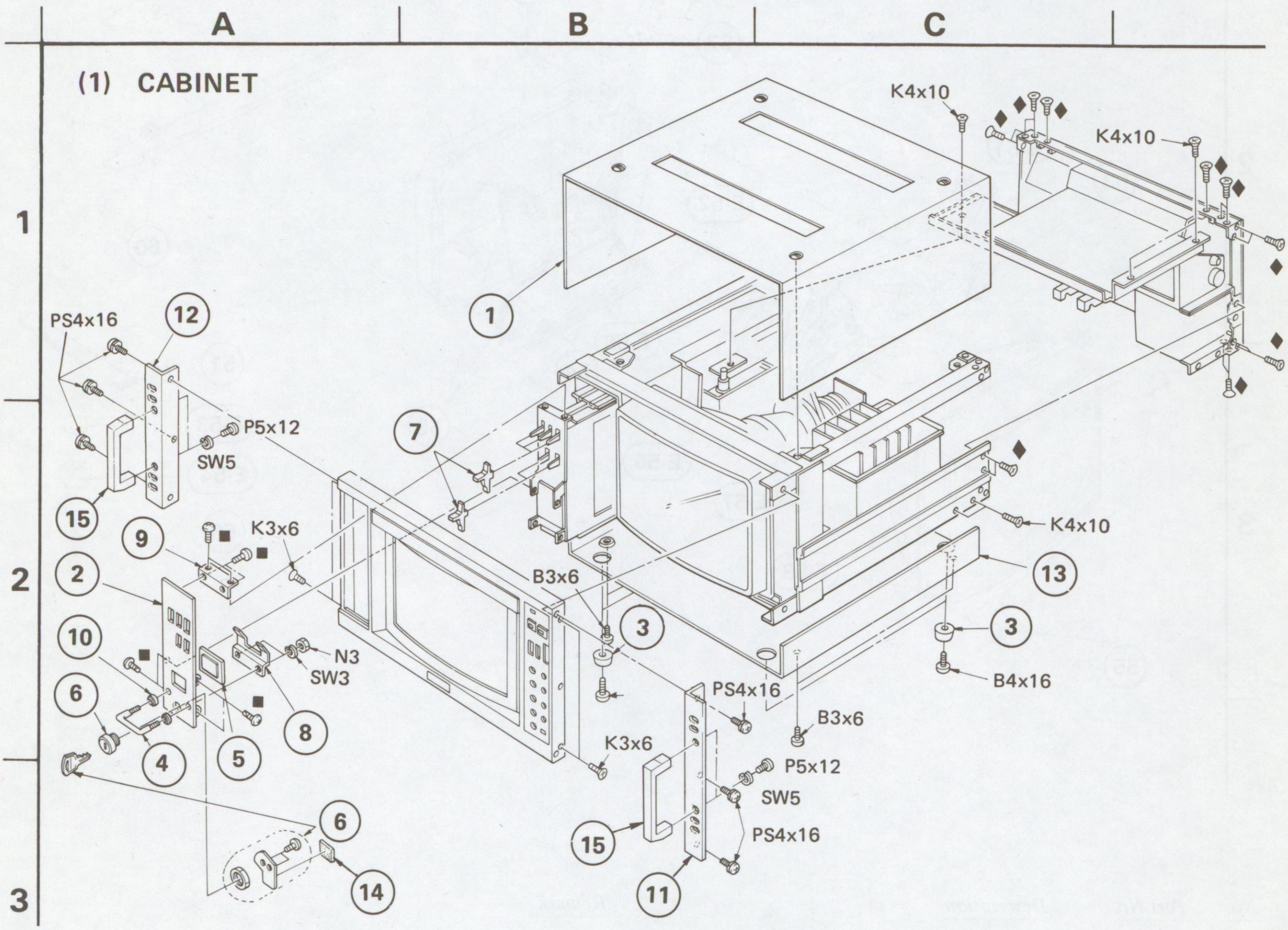
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

Note:
- As to the part numbered with E-, refer to the electrical pars list.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

Note: Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All screws are Phillips (cross recess) type unless otherwise noted. (–) = slotted head
- ■ : TA, BV 3 x 8
- ♦ : K 3 x 6

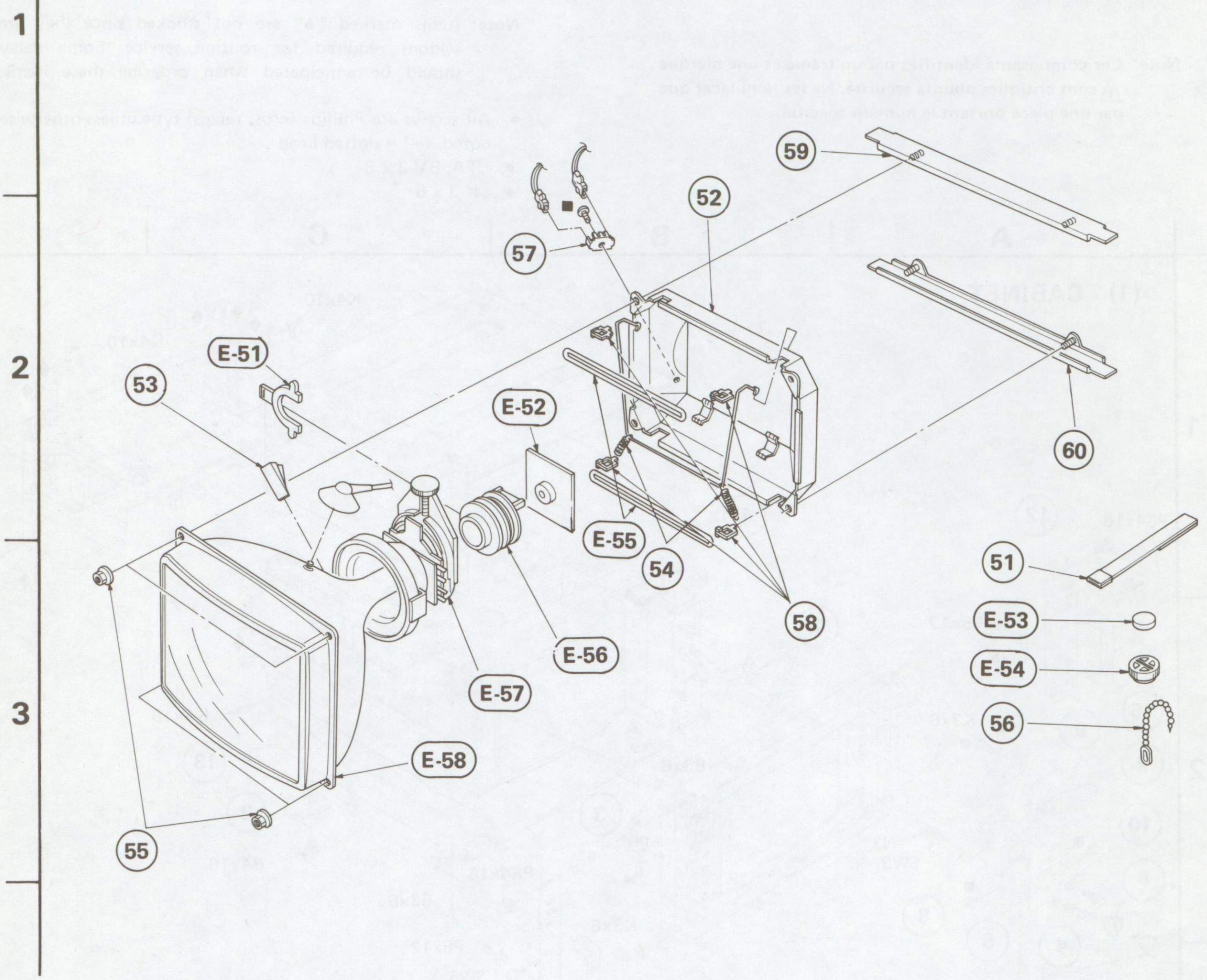
(1) CABINET



No.	Part No.	Description	Remark
1	X-4335-902-0	Cover Ass'y	
2	X-4335-903-4	Drawer	
3	X-4838-902-X	Foot, rubber	
4	4-335-904-02	Drawer Pull	
5	4-335-907-00	Cover, lamp	
6	4-335-937-00	Drawer Keyhole	
7	4-335-954-02	Knob, lever switch	
8	♠ 4-335-956-00	Bracket, lamp cover	
9	♠ 4-335-958-00	Bracket (E)	
10	4-335-959-02	Ring, ornamental	
11	♠ 4-335-963-00	Mounting Bracket, right	
12	♠ 4-335-964-00	Mounting Bracket, left	
13	4-335-983-00	Plate, bottom	
14	4-337-209-00	Cushion	
15	4-337-212-00	Handle	

A	B	C

(2) PICTURE TUBE

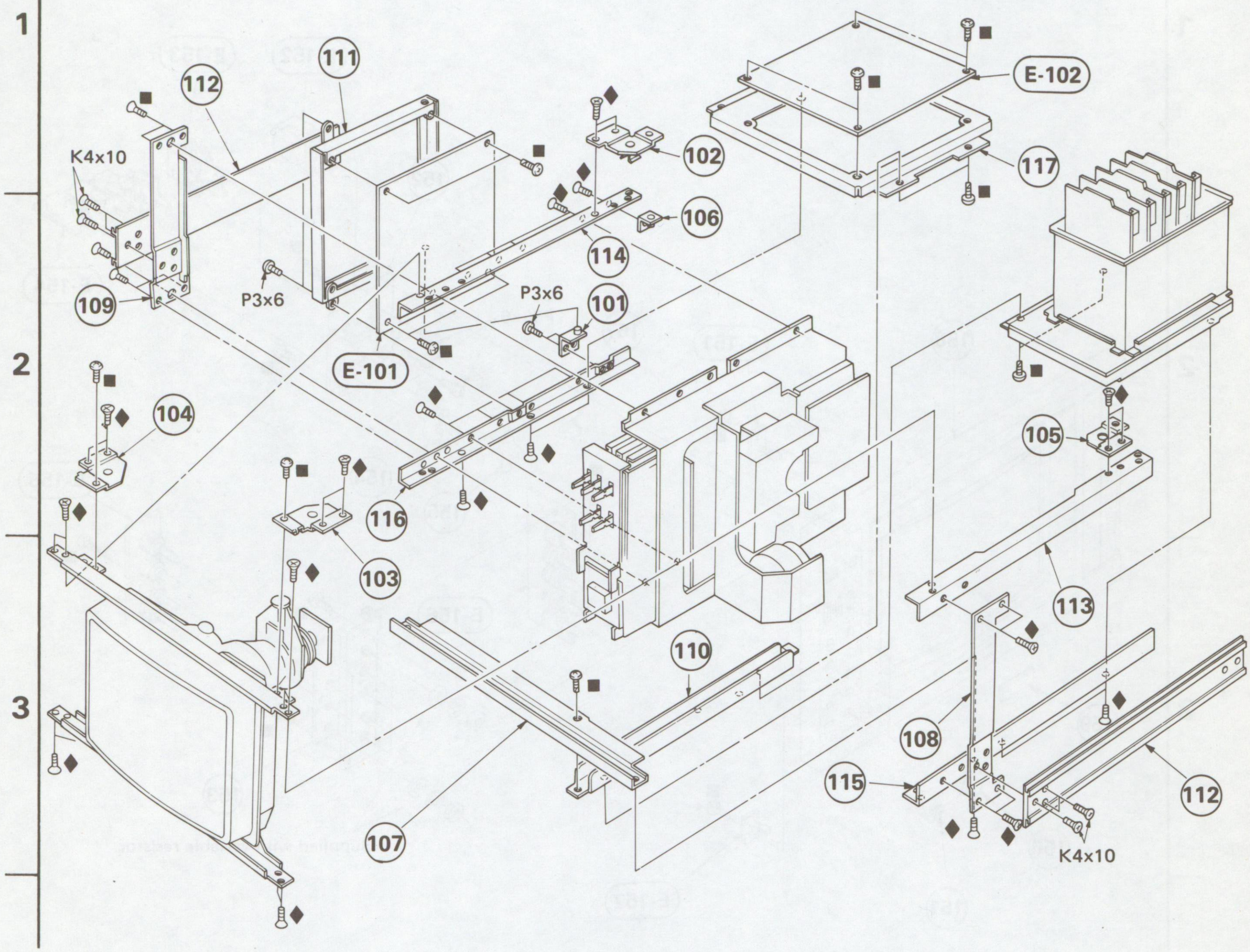


No.	Part No.	Description	Remark
51	X-4308-815-0	Permalloy Ass'y, convergence compensation	
52	X-4320-005-0	Shield picture tube	
53	3-703-003-00	Spacer, DY	
54	4-302-342-01	Spring	
55	4-304-511-00	Nut, flange	
56	4-308-870-00	Clip, lead wire	
57	♦ 4-309-624-00	Terminal, ground	
58	♦ 4-316-015-00	Holder, wire	
59	♦ 4-335-947-00	Bracket (Upper), picture tube	
60	♦ 4-335-948-00	Bracket (Lower), picture tube	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

	A	B	C

(3) SIDE FLAME

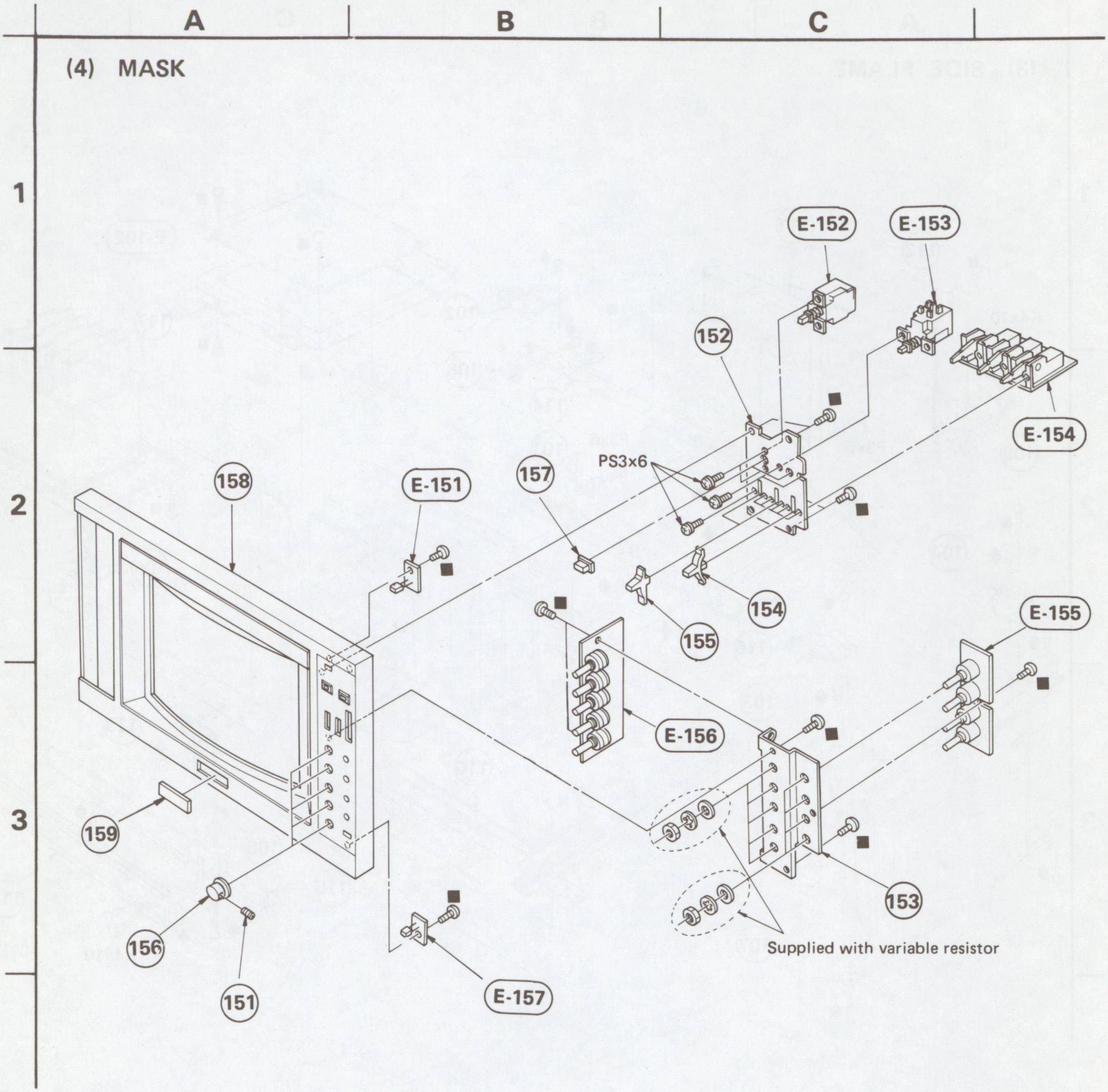


No.	Part No.	Description	Remark
101	• 4-335-917-00	Shaft, lower	
102	• 4-335-918-00	Bracket, fastener; left rear	
103	• 4-335-919-00	Bracket, fastener; right front	
104	• 4-335-920-00	Bracket, fastener; left front	
105	• 4-335-921-00	Bracket, fastener; right rear	
106	• 4-335-926-00	Shaft, upper	
107	• 4-335-940-00	Stay, lower	
108	• 4-335-941-00	Frame, right	
109	• 4-335-942-00	Frame, left	

No.	Part No.	Description	Remark
110	• 4-335-943-00	Stay (L)	
111	• 4-335-946-00	Bracket, E board	
112	• 4-335-961-00	Frame, side	
113	• 4-335-966-00	Frame, right upper	
114	• 4-335-967-00	Frame, left upper	
115	• 4-335-968-00	Frame, right lower	
116	• 4-335-969-00	Frame, left lower	
117	• 4-335-971-00	Bracket, G board	

Note: Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

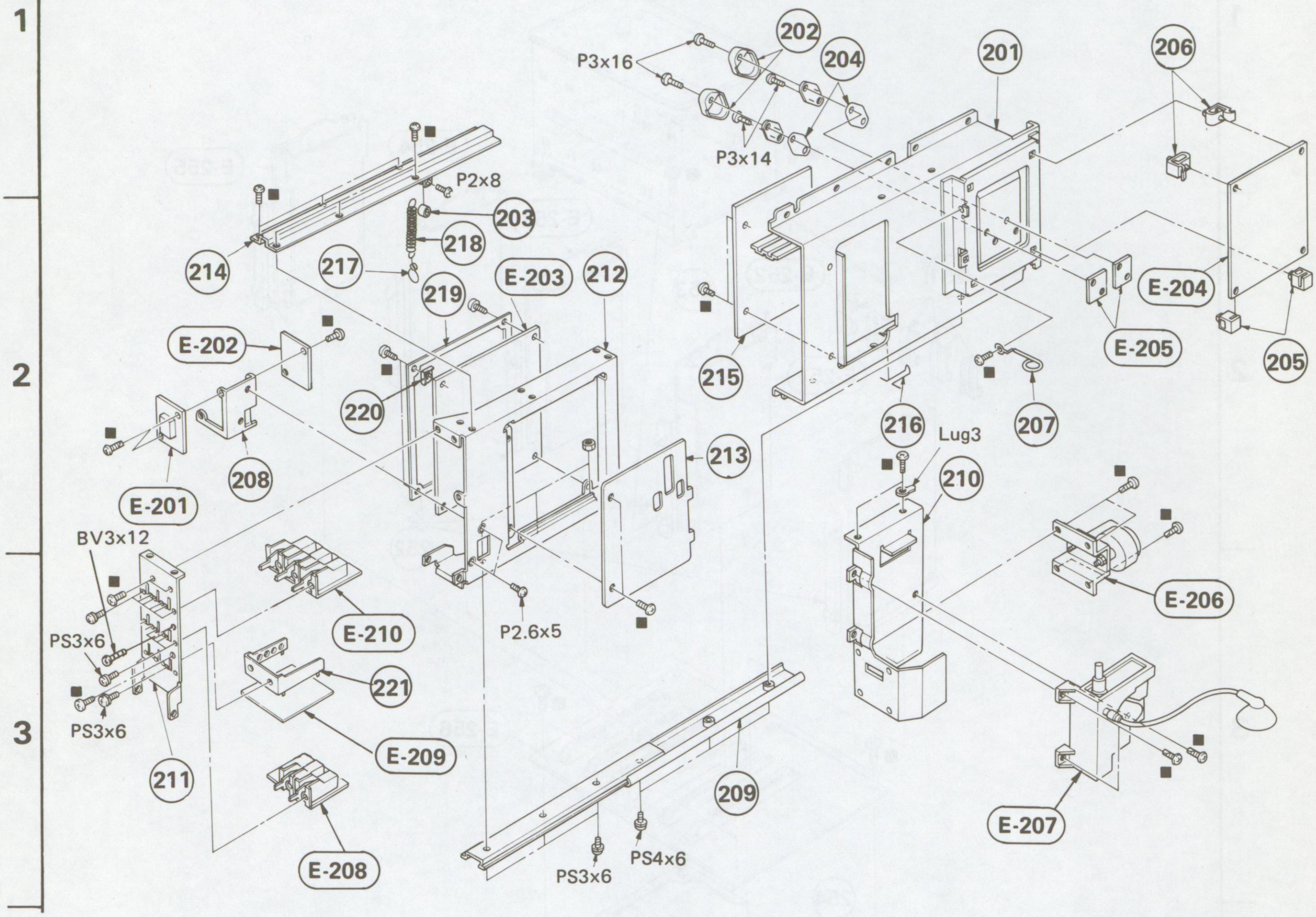
(4) MASK



No.		Part No.	Description	Remark
151		3-701-506-00	Set Screw, double point 3 x 4	
152	♦	4-335-906-00	Bracket, pushbutton switch	
153	♦	4-335-945-00	Bracket, control	
154		4-335-953-02	Knob, lever switch	
155		4-335-954-02	Knob, lever switch	
156		4-335-960-00	Knob, control	
157		4-335-962-00	Pushbutton	
158		4-335-976-02	Panel, front	
159		4-836-828-11	Emblem, SONY	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(5) CHASSIS (LEFT)

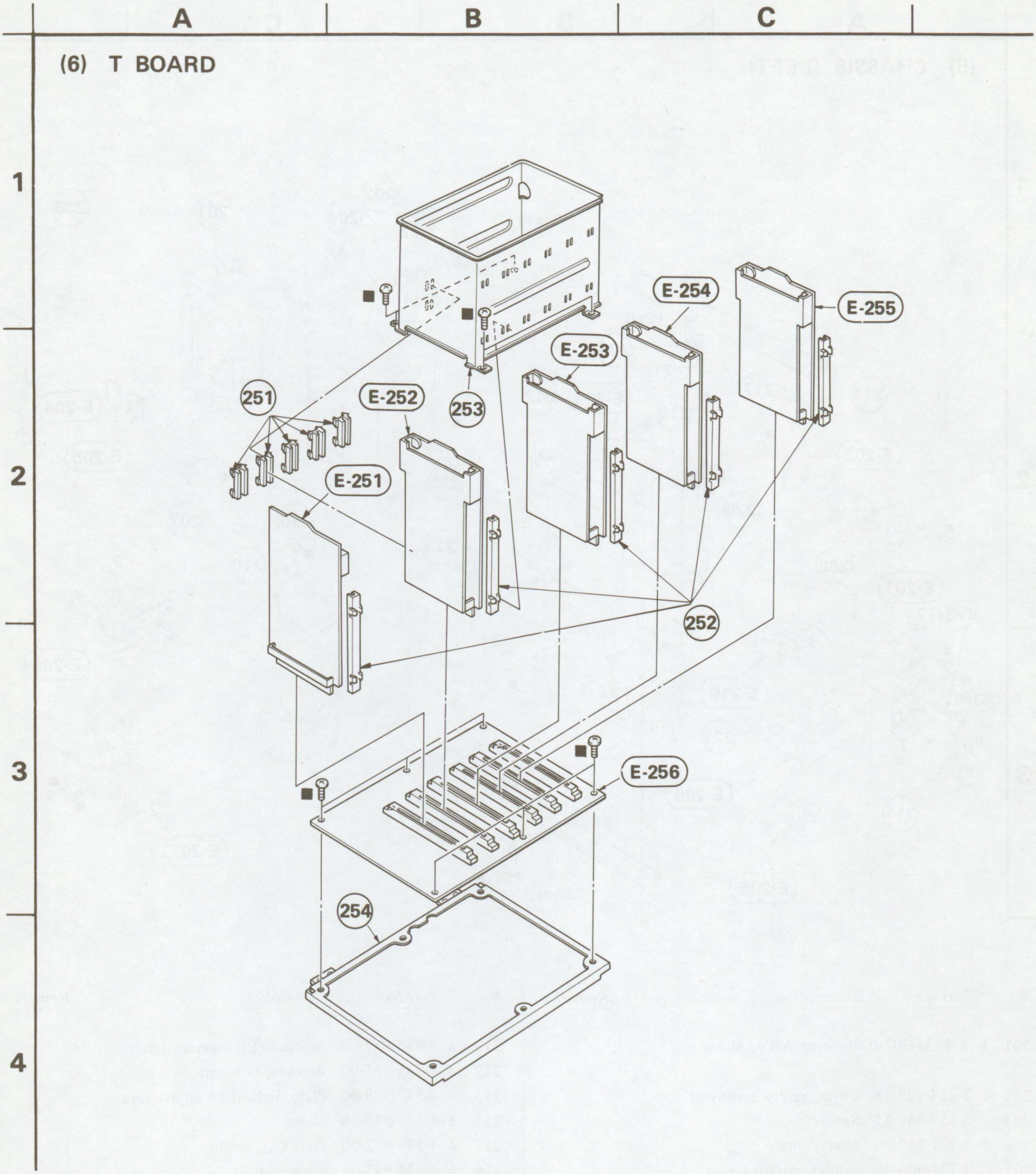


No.	Part No.	Description	Remark
201	♠ X-4335-901-0	Housing Ass'y, Slider	
202	2-234-429-11	Cover, safety transistor	
203	3-657-841-11	Spacer	
204	3-701-353-00	Spacer, mica	
205	3-701-903-00	Holder, circuit board	
206	3-703-141-00	Holder, circuit board	
207	4-303-731-00	Hook, lead wire	
208	♠ 4-335-910-00	Bracket, X board	
209	♠ 4-335-949-00	Rail, guide	
210	♠ 4-335-950-00	Bracket, FBT	
211	♠ 4-335-957-00	Bracket (L), lever switch	
212	♠ 4-335-965-00	Bracket, D board	
213	4-335-979-00	Plate, indication adjustment	
214	♠ 4-335-980-00	Slider	
215	♠ 4-335-992-00	Plate (L), shield	
216	♠ 4-335-993-00	Click (A)	
217	4-335-995-00	Ring	
218	4-335-996-00	Spring	
219	4-337-206-00	Cover, D board	
220	♠ 4-337-210-00	Plate (D) Ground	
221	♠ 4-337-215-00	Bracket (DB) PC Baord	

Note: Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

A	B	C

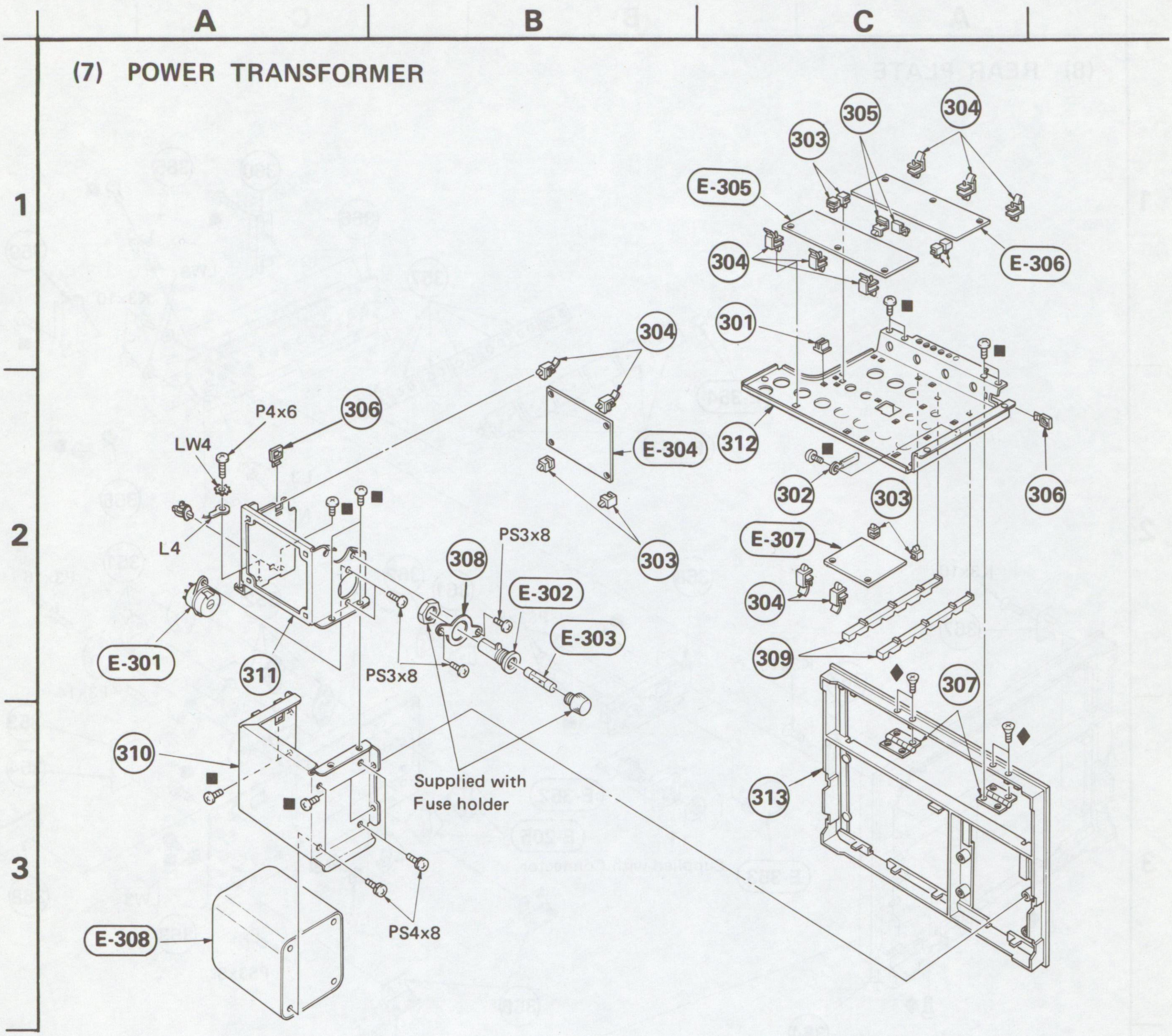
(6) T BOARD



No.		Part No.	Description	Remark
251	♠	4-335-930-00	Guide (S)	
252	♠	4-335-931-00	Guide (L)	
253	♠	4-335-951-00	Box, guide	
254	♠	4-335-972-00	Bracket, T board	

Note: Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

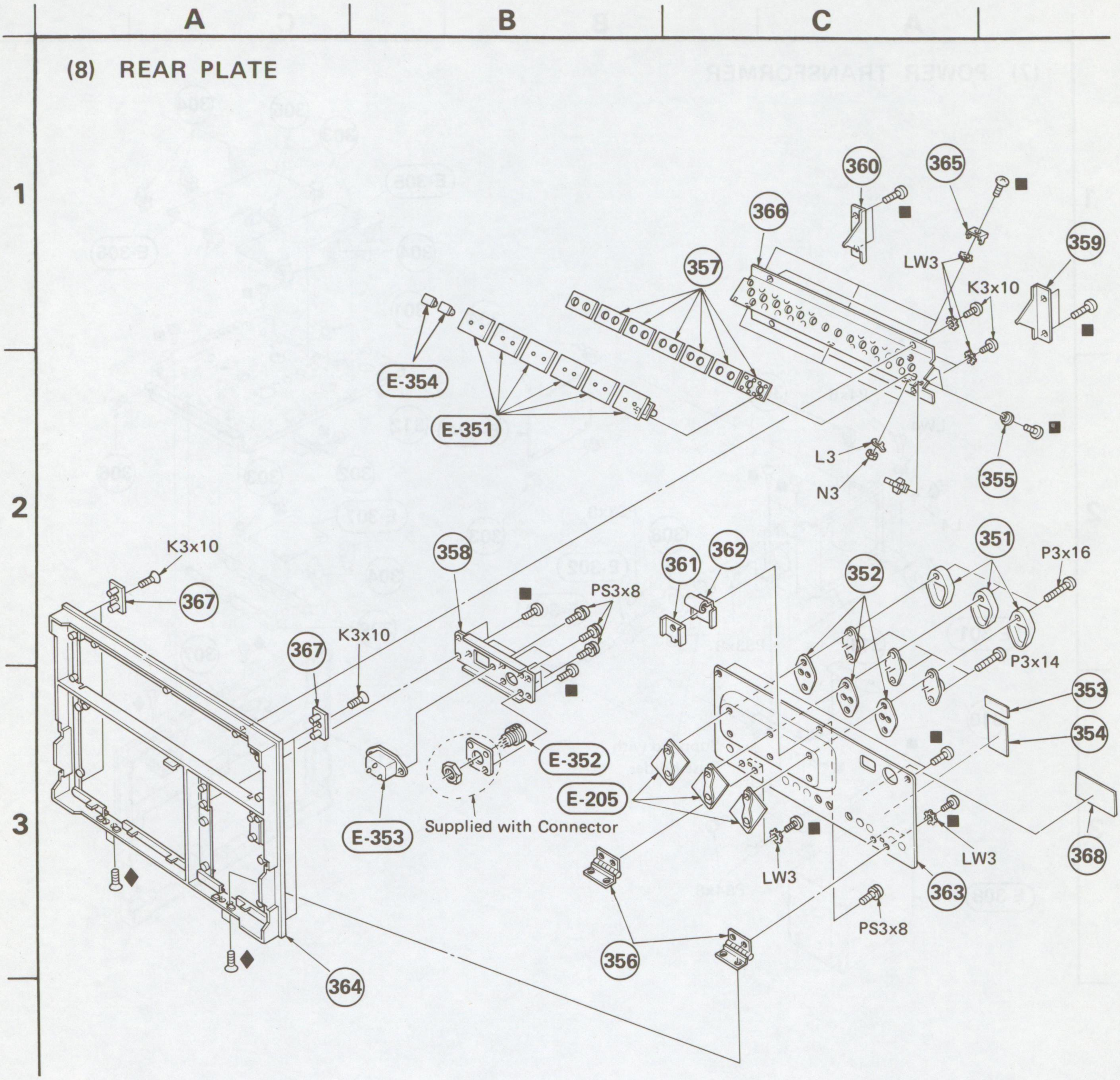
(7) POWER TRANSFORMER



No.		Part No.	Description	Remark
301		3-642-310-00	Holder, circuit board	
302		3-701-822-00	Holder, wire	
303		3-701-903-00	Holder, circuit board	
304		3-703-141-00	Holder, circuit board	
305		4-308-838-00	Holder, circuit board	
306		4-316-015-00	Holder, wire	
307	●	4-335-902-00	Hinge	
308	●	4-335-932-00	Bracket, fuse	
309	●	4-335-939-00	Stopper, circuit board	
310	●	4-335-952-00	Bracket, PT	
311	●	4-335-970-00	Bracket, F board	
312	●	4-335-974-00	Bracket, circuit board (upper)	
313	●	4-335-977-00	Frame, rear	

Note: Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(8) REAR PLATE



No.		Part No.	Description	Remark
351	♠	2-234-429-11	Cover, safety transistor	
352		2-825-003-00	Spacer	
353		3-701-829-01	Label, X-ray certif (Canadian)	
354	♠	4-017-439-00	Label, X-ray	
355		4-335-901-00	Bushing, BNC connector	
356		4-335-903-00	Hinge, rear plate	
357	♠	4-335-927-00	Terminal (S), ground	
358	♠	4-335-928-00	Bracket, AC IN connector	
359	♠	4-335-933-00	Plate (R), side	
360	♠	4-335-934-00	Plate (L), side	
361		4-335-935-00	Retainer, click	
362		4-335-936-00	Click (B)	
363	♠	4-335-973-00	Plate, rear	
364	♠	4-335-977-00	Frame, rear	
365		4-335-978-00	Terminal BNC ground	
366		4-335-981-00	Plate, connector	
367		4-335-986-00	Foot, rear	
368	♠	4-349-001-00	Label, model number, (Larger)	

Note: Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

SECTION 8
ELECTRICAL PARTS LIST

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:
- All capacitors are in μF and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics. p : $\mu\mu$F, elect : electrolytic
- All resistors are in ohms, 1/8 W, 5% tolerances unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All coils are microinductors unless otherwise noted.
- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- All variable and adjustable resistors are metal oxide unless otherwise noted.
- □□% and (□□ p): indicates tolerance of value. 1% ⟶ ±1% tolerance (0.25 p) ⟶ ±0.25 p tolerance All electrolytics' tolerances are ±20%.
- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description			Remark
1. BA BOARD					
	♠ A-1135-080-A	BA Board, complete			E-255
	CAPACITORS				
C1001	1-101-006-00	0.047			
C1002,1003	1-123-316-00	10	16V	elect	
C1004	1-102-883-00	27p		5%	
C1005	1-108-626-00	0.01	100V	10% mylar	
C1006	1-101-006-00	0.047			
C1007	1-102-935-00	2p		(0.25p)	
C1008–1013	1-101-006-00	0.047			
C1014	1-102-852-00	47p		0.5%	
C1015	1-102-508-00	10p		(0.5p)	
C1016,1017	1-123-316-00	10	16V	elect	
C1018,1019	1-102-658-00	180p		5%	
C1020	1-101-006-00	0.047			
C1021,1022	1-123-316-00	10	16V	elect	
C1023	1-101-006-00	0.047			
C1024,1025	1-109-687-00	390p	500V	1% mica	
C1026	1-109-685-00	330p	500V	1% mica	
C1027	1-102-504-00	4p		(0.25p)	
C1028	1-123-319-00	47	16V	elect	
C1029	1-109-688-00	430p	500V	1% mica	
C1030	1-109-677-00	150p	500V	1% mica	
C1031	1-109-661-00	33p	500V	1% mica	
C1032,1033	1-123-316-00	10	16V	elect	
C1034	1-123-319-00	47	16V	elect	
C1035	1-101-006-00	0.047			
C1036	1-101-004-00	0.01			
C1037	1-123-319-00	47	16V	elect	
C1038	1-102-822-00	390p		5%	
C1039	1-123-316-00	10	16V	elect	
C1040	1-101-001-00	0.001			
C1041	1-123-319-00	47	16V	elect	
C1042	1-109-688-00	430p	500V	1% mica	
C1043	1-109-677-00	150p	500V	1% mica	
C1044	1-109-661-00	33p	500V	1% mica	
C1045,1046	1-123-316-00	10	16V	elect	
C1047	1-123-319-00	47	16V	elect	
C1048	1-101-006-00	0.047			
C1049	1-101-004-00	0.01			
C1050	1-123-319-00	47	16V	elect	
C1051	1-123-316-00	10	16V	elect	
C1052	1-102-822-00	390p		5%	
C1053	1-101-001-00	0.001			
C1054	1-108-630-00	0.022	100V	10% mylar	
C1055	1-108-632-00	0.033	100V	10% mylar	
C1056	1-123-316-00	10	16V	elect	
C1057	1-108-638-00	0.1	100V	10% mylar	

Ref. No.	Part No.	Description	Remark
C1058	1-108-630-00	0.022 100V	10% mylar
C1059	1-108-632-00	0.033 100V	10% mylar
C1060	1-123-351-00	0.47 50V	elect
C1061,1062	1-101-006-00	0.047	
C1063	1-123-351-00	0.47 50V	elect
C1065	1-123-316-00	10 16V	elect
C1066–1069	1-102-888-00	150p	5%
C1070	1-123-316-00	10 16V	elect
C1071	1-101-006-00	0.047	
C1072,1073	1-123-316-00	10 16V	elect

DIODES

Ref. No.	Part No.	Description	Remark
⇒ D1001	8-719-143-07	RD4.3E-B	
D1002	8-712-500-00	IT25-0	
D1004,1005	8-719-815-55	1S1555	
⇒ D1006,1007	8-719-143-07	RD4.3E-B	
D1008	8-719-815-55	1S1555	
⇒ D1009	8-719-422-21	IT22AM	
⇒ D1010	8-719-143-07	RD4.3E-B	

ICs

Ref. No.	Part No.	Description	Remark
IC1001	8-759-156-20	μPC562C	
IC1002,1003	8-751-300-00	CX130	
IC1004,1005	8-759-145-58	μPC4558C	
IC1006	8-759-901-23	SN74LS123N	
IC1007	8-759-900-00	SN74LS00N	
IC1008	8-759-900-26	SN74LS26N	

COILS

Ref. No.	Part No.	Description	Remark
L1001	1-409-193-21	100μH	3.58MHz, trap
L1002,1003	1-407-705-00	100μH	10%
L1004	1-407-571-00	Variable, 22μH	3.58MHz, level
L1005	1-409-193-21	100μH	3.58MHz, trap
L1006	1-407-573-00	Variable, 47μH	
L1007	1-409-193-21	100μH	3.58MHz, trap
L1008	1-407-573-00	Variable, 47μH	

TRANSISTORS

Ref. No.	Part No.	Description	Remark
⇒ Q1003	8-723-301-01	2SK43-11	
⇒ Q1020	8-723-301-01	2SK43-11	
Q1021	8-722-384-01	2SK23A-840	
Q1032	8-729-612-77	2SA1027R	
⇒ Q1030	8-723-301-01	2SK43-11	
⇒ Q1031	8-722-384-01	2SK23A-840	
Q1022	8-760-413-00	2SC1475	
⇒ Q1033,1034	8-723-301-01	2SK43-11	
Q1001, 1002, 1005, 1006, 1007, 1009, 1010–1013, 1015, 1016, 1018, 1019, 1023, 1025, 1026, 1028, 1029, 1037	8-724-375-01	2SC403C	
⇒ Q1004, 1008, ⇒ 1014, 1017, ⇒ 1024, 1027, 1032, ⇒ 1035, 1036	8-729-612-77	2SA1027R	
Q1038	8-729-663-47	2SC1364	

RESISTORS

Ref. No.	Part No.	Description	Remark
R1001	1-246-771-00	100	carbon
R1002	1-246-795-00	10k	carbon
R1003	1-246-796-00	12k	carbon
R1004	1-246-794-00	8.2k	carbon
R1005	1-246-783-00	1k	carbon
R1006	1-214-140-00	2.2k ¼W	1%, metal oxide
R1007	1-246-864-00	51k	carbon
R1008	1-202-473-11	5.6M 5% ¼W	compsition
R1009	1-202-455-11	1M 5% ¼W	composition
R1010	1-214-124-00	470 ¼W	1% metal oxide
R1011	1-214-128-00	680 ¼W	1% metal oxide
R1012	1-214-152-00	6.8k ¼W	1% metal oxide
R1013	1-246-853-00	6.2k	carbon
R1014	1-214-108-00	100 ¼W	1% metal oxide
R1015	1-246-788-00	2.7k	carbon
R1016	1-246-771-00	100	carbon
R1017–1019	1-246-789-00	3.3k	carbon
R1020	1-214-136-00	1.5k ¼W	1% metal oxide
R1021	1-246-771-00	100	carbon
R1022–1026	1-214-136-00	1.5k ¼W	1% metal oxide
R1027	1-214-139-00	2k ¼W	1% metal oxide
R1028	1-214-154-00	8.2k ¼W	1% metal oxide
R1029,1030	1-246-771-00	100	carbon
R1031	1-214-164-00	22k ¼W	1% metal oxide
R1032	1-246-785-00	1.5k	carbon
R1033	1-246-783-00	1k	carbon
R1034	1-246-771-00	100	carbon
R1035	1-246-787-00	2.2k	carbon
R1036	1-246-771-00	100	carbon
R1037	1-246-797-00	15k	carbon
R1038	1-246-808-00	120k	carbon
R1039	1-246-795-00	10k	carbon

Ref. No.	Part No.			Description	Remark
R1040	1-246-797-00	15k		carbon	
R1041	1-246-848-00	2.4k		carbon	
R1042	1-214-128-00	680	¼W	1% metal oxide	
R1043	1-214-090-00	18	¼W	1% metal oxide	
R1044	1-214-128-00	680	¼W	1% metal oxide	
R1045	1-214-090-00	18	¼W	1% metal oxide	
R1046	1-246-791-00	4.7k		carbon	
R1047,1048	1-246-771-00	100		carbon	
R1049	1-246-793-00	6.8k		carbon	
R1050	1-246-771-00	100		carbon	
R1051	1-246-792-00	5.6k		carbon	
R1052	1-246-789-00	3.3k		carbon	
R1053	1-246-793-00	6.8k		carbon	
R1054	1-246-853-00	6.2k		carbon	
R1055	1-246-781-00	680		carbon	
R1056	1-246-853-00	6.2k		carbon	
R1057	1-246-788-00	2.7k		carbon	
R1058	1-246-790-00	3.9k		carbon	
R1059	1-246-807-00	100k		carbon	
R1060	1-246-795-00	10k		carbon	
R1061	1-244-867-00	560	½W	carbon	
R1062	1-246-797-00	15k		carbon	
R1063	1-246-848-00	2.4k		carbon	
R1064	1-214-128-00	680	¼W	1% metal oxide	
R1065	1-214-090-00	18	¼W	1% metal oxide	
R1066	1-214-128-00	680	¼W	1% metal oxide	
R1067	1-214-090-00	18	¼W	1% metal oxide	
R1068	1-246-791-00	4.7k		carbon	
R1069–1071	1-246-771-00	100		carbon	
R1072	1-246-792-00	5.6k		carbon	
R1073	1-246-789-00	3.3k		carbon	
R1074	1-246-793-00	6.8k		carbon	
R1075	1-246-853-00	6.2k		carbon	
R1076	1-246-781-00	680		carbon	
R1077	1-246-790-00	3.9k		carbon	
R1078	1-246-788-00	2.7k		carbon	
R1079	1-246-790-00	3.9k		carbon	
R1080	1-246-807-00	100k		carbon	
R1081	1-246-795-00	10k		carbon	
R1082	1-244-867-00	560	½W	carbon	
R1083	1-202-473-11	5.6M	5% ¼W	compsition	
R1084	1-246-783-00	lk		carbon	
R1085	1-246-771-00	100		carbon	
R1086	1-202-455-11	1M	5% ¼W	compsition	
R1087	1-246-795-00	10k		carbon	
R1088	1-202-455-11	1M	5% ¼W	compsition	

Ref. No.	Part No.			Description	Remark
R1089	1-214-168-00	33k	¼W	1% metal oxide	
R1090	1-246-800-00	27k		carbon	
R1091	1-214-168-00	33k	¼W	1% metal oxide	
R1092	1-202-473-11	5.6M	5% ¼W	compsition	
R1093	1-246-783-00	1k		carbon	
R1094	1-246-771-00	100		carbon	
R1095	1-246-803-00	47k		carbon	
R1096	1-202-455-11	1M	5% ¼W	compsition	
R1097,1098	1-214-148-00	4.7k	¼W	1% metal oxide	
R1099	1-214-141-00	2.4k	¼W	1% metal oxide	
R1100	1-246-795-00	10k		carbon	
R1101	1-214-143-00	3k	¼W	1% metal oxide	
R1102	1-202-455-11	1M	5% ¼W	composition	
R1103	1-214-180-00	100k	¼W	1% metal oxide	
R1104	1-246-795-00	10k		carbon	
R1105,1106	1-246-803-00	47k		carbon	
R1107	1-246-781-00	680		carbon	
R1108	1-246-853-00	6.2k		carbon	
R1109	1-246-787-00	2.2k		carbon	
R1110	1-246-788-00	2.7k		carbon	
R1111	1-246-779-00	470		carbon	
R1112	1-246-865-00	62k		carbon	
R1113	1-247-046-00	270k		carbon	
R1114	1-246-788-00	2.7k		carbon	
R1115	1-214-142-00	2.7k	¼W	1% metal oxide	
R1116	1-214-163-00	20k	¼W	1% metal oxide	
R1117	1-246-795-00	10k		carbon	
R1118	1-246-858-00	16k		carbon	
R1119	1-246-857-00	13k		carbon	
R1120	1-246-848-00	2.4k		carbon	
R1121	1-246-852-00	5.1k		carbon	
R1123	1-214-141-00	2.4k	¼W	1% metal oxide	
RV1001	1-224-937-00	Variable, 1k			CHROMA LEVEL
RV1002	1-226-012-00	Variable, 2k			B-Y PHASE
RV1003	1-224-938-00	Variable, 2k			R-Y LEVEL
RV1004	1-224-938-00	Variable, 2k			B-Y LEVEL
RV1005	1-224-941-00	Variable, 20k			HUE
RV1006	1-224-940-00	Variable, 10k			BURST CLAMP PULSE WIDTH
RV1007	1-224-941-00	Variable, 20k			BURST GATE PULSE WIDTH

MISCELLANEOUS

S1001	1-552-898-11	Toggle, CLEANING
X1001	1-527-396-00	Crystal

2. BB BOARD

Ref. No.	Part No.	Description			Remark
♠	A-1135-081-A	BB Board, complete			E-254

CAPACITORS

Ref. No.	Part No.	Description			Remark
C2002	1-123-316-00	10	16V	elect	
C2003	1-101-006-00	0.047			
C2004	1-102-504-00	4p		(0.25p)	
C2005	1-123-316-00	10	16V	elect	
C2006	1-108-638-00	0.1	100V	10% mylar	
C2007	1-101-004-00	0.01			
C2008	1-123-298-00	470	6.3V	elect	
C2009	1-123-319-00	47	16V	elect	
C2010, 2011	1-123-316-00	10	16V	elect	
C2012	1-101-004-00	0.01			
C2013	1-108-638-00	0.1	100V	10% mylar	
C2015	1-123-320-00	100	16V	elect	
C2016	1-101-006-00	0.047			
C2017	1-123-320-00	100	16V	elect	
C2018	1-102-504-00	4p		(0.25p)	
C2019	1-108-638-00	0.1	100V	10% mylar	
C2020	1-101-004-00	0.01			
C2021	1-123-298-00	470	6.3V	elect	
C2022	1-123-319-00	47	16	elect	
C2023, 2024	1-123-316-00	10	16V	elect	
C2025	1-101-004-00	0.01			
C2026	1-108-638-00	0.1	100V	10% mylar	
C2027	1-101-918-00	0.001			
C2028	1-123-316-00	10	16V	elect	
C2029	1-121-257-00	4.7	16V	elect (nonpolarized)	
C2030, 2031	1-123-316-00	10	16V	elect	
C2032	1-102-504-00	4p		(0.25p)	
C2033	1-108-638-00	0.1	100V	10% mylar	
C2034, 2035	1-101-004-00	0.01			
C2036	1-108-626-00	0.01	100V	10% mylar	
C2037	1-101-004-00	0.01			
C2038	1-101-006-00	0.047			
C2039	1-108-626-00	0.01	100V	10% mylar	
C2040	1-121-257-00	4.7	16V	elect (nonpolarized)	
C2041A	1-101-006-00	0.047			
C2041B	1-121-257-00	4.7	16V	elect (nonpolarized)	
C2042	1-123-319-00	47	16V	elect	
C2043	1-101-004-00	0.01			
C2044	1-108-638-00	0.1	100V	10% mylar	
C2045–2047	1-123-320-00	100	16V	elect	
C2048, 2049	1-102-858-00	10p		(0.5p)	
C2050	1-102-851-00	15p		0.5%	
C2051	1-123-319-00	47	16V	elect	
C2052	1-102-520-00	39p		0.5%	
C2053	1-123-320-00	100	16V	elect	
C2054, 2055	1-123-316-00	10	16V	elect	
C2056	1-101-006-00	0.047			
C2057, 2058	1-123-316-00	10	16V	elect	
C2059	1-102-504-00	4p		(0.25p)	
C2060–2062	1-101-006-00	0.047			
C2063	1-123-316-00	10	16V	elect	
C2064	1-101-004-00	0.01			
C2065	1-123-319-00	47	16V	elect	
C2066	1-121-801-00	47	16V	elect (nonpolarized)	
C2067	1-108-638-00	0.1	100V	10% mylar	
C2068	1-123-316-00	10	16V	elect	
C2069	1-102-406-61	2p		(0.25p)	
C-2070, 2071	1-123-321-00	220	16V	elect	
C2072	1-101-880-00	47p			

DIODES

Ref. No.	Part No.	Description	Remark
D2001	8-719-151-77	RD5.1E-C	
D2002	8-719-162-07	RD6.2E-B	
D2003	8-719-156-77	RD5.1E-C	
D2004	8-719-162-07	RD6.2E-B	
D2005–2007	8-719-815-55	1S1555	
⇒ D2008	8-719-143-07	RD4.3E-B	
D2009	8-719-182-07	RD8.2E-B	
⇒ D2010	8-719-143-07	RD4.3E-B	
DL2001	1-415-184-11		Delay Line
DL2002	1-415-184-21		Delay Line

- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description	Remark
		ICs	
IC2001	8-757-182-20	CX718D	
IC2002–2004	8-759-145-58	μPC4558C	
IC2005	8-751-300-00	CX130	
IC2006	8-759-271-58	TA7158P	
IC2007	8-759-145-58	μPC4558C	
IC2008	8-759-900-26	SN74LS26N	
		COILS	
L2001	1-409-193-21	3.58MHz TRAP	
L2002	1-407-573-00	Variable 47μH	2T PULSE CORRECTION
L2003	1-407-566-00	Variable 3.3μH	PL MATCHING
L2004	1-407-694-00	12μH 10%	
L2005	1-407-688-00	3.9μH 10%	
		TRANSISTORS	
Q2001–2003	8-724-375-01	2SC403C	
⇒ Q2004	8-723-301-01	2SK43-11	
Q2005	8-724-375-01	2SC403C	
⇒ Q2006	8-729-612-77	2SA1027R	
Q2007	8-724-375-01	2SC403C	
⇒ Q2008	8-723-301-01	2SK43-11	
Q2009–2011	8-724-375-01	2SC403C	
⇒ Q2012	8-723-301-01	2SK43-11	
Q2013	8-724-375-01	2SC403C	
⇒ Q2014	8-729-612-77	2SA1027R	
Q2015	8-724-375-01	2SC403C	
⇒ Q2016	8-723-301-01	2SK43-11	
Q2017–2020	8-724-375-01	2SC403C	
⇒ Q2021	8-723-301-01	2SK43-11	
Q2022	8-724-375-01	2SC403C	
Q2023	8-723-301-01	2SK43-11	
⇒ Q2024	8-729-612-77	2SA1027R	
Q2025	8-724-375-01	2SC403C	
⇒ Q2026	8-723-301-01	2SK43-11	
⇒ Q2027	8-729-612-77	2SA1027R	
Q2028	8-724-375-01	2SC403C	
⇒ Q2029	8-723-301-01	2SK43-11	
Q2030	8-724-375-01	2SC403C	

Ref. No.	Part No.	Description			Remark
⇒ Q2031	8-729-612-77	2SA1027R			
Q2032–2036	8-724-375-01	2SC403C			
⇒ Q2037,2038	8-729-612-77	2SA1027R			
Q2039	8-724-375-01	2SC403C			
⇒ Q2040	8-723-301-01	2SK43-11			
⇒ Q2041	8-729-612-77	2SA1027R			
Q2042	8-724-375-01	2SC403C			
		RESISTORS			
R2001	1-246-771-00	100			carbon
R2002	1-214-156-00	10k		¼W	1% metal oxide
R2005	1-214-156-00	10k		¼W	1% metal oxide
R2006, 2007	1-214-132-00	1k		¼W	1% metal oxide
R2008	1-246-789-00	3.3k			carbon
R2009, 2010	1-246-771-00	100			carbon
R2011	1-202-473-11	5.6M	5%	¼W	composition
R2012	1-246-795-00	10k			carbon
R2013	1-202-473-11	5.6M	5%	¼W	composition
R2014	1-214-132-00	1k		¼W	1% metal oxide
R2015	1-246-853-00	6.2k			carbon
R2016	1-214-148-00	4.7k		¼W	1% metal oxide
R2017	1-246-788-00	2.7k			carbon
R2018	1-202-473-11	5.6M	5%	¼W	compositon
R2019	1-246-795-00	10k			carbon
R2020, 2021	1-246-783-00	1k			carbon
R2022	1-246-771-00	100			carbon
R2023	1-214-156-00	10k		¼W	1% metal oxide
R2026	1-214-156-00	10k		¼W	1% metal oxide
R2027, 2028	1-214-132-00	1k		¼W	1% metal oxide
R2029	1-246-789-00	3.3k			carbon
R2030, 2031	1-246-771-00	100			carbon
R2032	1-202-473-11	5.6M	5%	¼W	composition
R2033	1-246-795-00	10k			carbon
R2034	1-202-473-11	5.6M	5%	¼W	composition
R2035	1-214-132-00	1k		¼W	1% metal oxide
R2036	1-246-853-00	6.2k			carbon
R2037	1-214-148-00	4.7k		¼W	1% metal oxide
R2038	1-246-788-00	2.7k			carbon
R2039	1-202-473-11	5.6M	5%	¼W	composition
R2040	1-246-795-00	10k			carbon
R2041, 2042	1-246-783-00	1k			carbon
R2043	1-246-794-00	8.2k			carbon

Ref. No.	*Part No.*	*Description*		*Remark*
R2044	1-246-788-00	2.7k		carbon
R2045	1-214-156-00	10k	¼W	1% metal oxide
R2046	1-214-145-00	3.6k	¼W	1% metal oxide
R2047	1-214-156-00	10k	¼W	1% metal oxide
R2048	1-214-180-00	100k	¼W	1% metal oxide
R2049, 2050	1-214-156-00	10k	¼W	1% metal oxide
R2051, 2052	1-214-132-00	1k	¼W	1% metal oxide
R2053	1-246-789-00	3.3k		carbon
R2054, 2055	1-246-771-00	100		carbon
R2056	1-202-473-11	5.6M	5% ¼W	composition
R2057	1-246-795-00	10k		carbon
R2058	1-202-473-11	5.6M	5% ¼W	composition
R2059	1-246-789-00	3.3k		carbon
R2060	1-246-795-00	10k		carbon
R2061	1-202-473-11	5.6M	5% ¼W	composition
R2062	1-246-771-00	100		carbon
R2063, 2064	1-246-799-00	22k		carbon
R2065	1-246-795-00	10k		carbon
R2066	1-202-473-11	5.6M	5% ¼W	composition
R2067	1-246-795-00	10k		carbon
R2068	1-214-180-00	100k	¼W	1% metal oxide
R2069	1-214-159-00	13k	¼W	1% metal oxide
R2070	1-246-796-00	12k		carbon
R2071	1-214-136-00	1.5k	¼W	1% metal oxide
R2072	1-214-090-00	18	¼W	1% metal oxide
R2073	1-214-132-00	1k	¼W	1% metal oxide
R2074	1-214-129-00	750	¼W	1% metal oxide
R2075	1-246-853-00	6.2k		carbon
R2076	1-214-142-00	2.7k	¼W	1% metal oxide
R2077	1-202-473-11	5.6M	5% ¼W	composition
R2078	1-246-795-00	10k		carbon
R2079, 2080	1-246-783-00	1k		carbon
R2081	1-246-771-00	100		carbon
R2082	1-246-795-00	10k		carbon
R2083	1-214-142-00	2.7k	¼W	1% metal oxide
R2084	1-246-771-00	100		carbon
R2085	1-246-785-00	1.5k		carbon
R2086	1-246-773-00	150		carbon
R2087	1-246-788-00	2.7k		carbon
R2088, 2089	1-214-132-00	1k	¼W	1% metal oxide
R2090	1-246-786-00	1.8k		carbon
R2091	1-214-139-00	2k	¼W	1% metal oxide
R2092	1-246-791-00	4.7k		carbon
R2093	1-246-771-00	100		carbon
R2094	1-246-787-00	2.2k		carbon

Ref. No.	*Part No.*	*Description*		*Remark*
R2095	1-246-795-00	10k		carbon
R2096, 2097	1-246-847-00	2k		carbon
R2098	1-246-786-00	1.8k		carbon
R2099	1-246-783-00	1k		carbon
R2100, 2101	1-246-791-00	4.7k		carbon
R2102	1-246-788-00	2.7k		carbon
R2103	1-246-783-00	1k		carbon
R2104	1-246-835-00	200		carbon
R2105	1-214-124-00	470	¼W	1% metal oxide
R2106, 2107	1-214-108-00	100	¼W	1% metal oxide
R2108	1-214-126-00	560	¼W	1% metal oxide
R2109	1-214-150-00	5.6k	¼W	1% metal oxide
R2110, 2111	1-214-180-00	100k	¼W	1% metal oxide
R2112	1-246-785-00	1.5		carbon
R2113, 2114	1-246-842-00	750		carbon
R2115	1-214-128-00	680	¼W	1% metal oxide
R2116	1-214-120-00	330	¼W	1% metal oxide
R2117	1-214-091-00	20	¼W	1% metal oxide
R2118	1-214-120-00	330	¼W	1% metal oxide
R2119	1-214-091-00	20	¼W	1% metal oxide
R2120	1-246-853-00	6.2k		carbon
R2121	1-214-136-00	1.5k	¼W	1% metal oxide
R2122	1-246-841-00	620		carbon
R2123	1-246-788-00	2.7k		carbon
R2124	1-246-795-00	10k		carbon
R2125	1-202-473-11	5.6M	5% ¼W	composition
R2126, 2127	1-246-783-00	1k		carbon
R2128, 2129	1-246-784-00	1.2k		carbon
R2130	1-246-841-00	620		carbon
R2133	1-214-162-00	18k	¼W	1% metal oxide
R2131	1-214-120-00	330	¼W	1% metal oxide
R2132	1-214-125-00	510	¼W	1% metal oxide
R2133	1-214-162-00	18k	¼W	1% metal oxide
R2135	1-246-791-00	4.7k		carbon
R2136	1-246-787-00	2.2k		carbon
R2137, R2138	1-246-771-00	100		carbon
R2139	1-214-095-00	30	¼W	1% metal oxide
R2140	1-202-463-00	2.2M	¼W	composition
RV2001	1-224-936-00	Variable, 500		G-Y AMP
RV2002	1-224-937-00	Variable, 1k		G-Y PHASE
RV2003	1-224-941-00	Variable, 20k		APERTUER PRESET
RV2004	1-224-937-00	Variable, 1k		Y-LEVEL
RV2005	1-224-936-00	Variable, 500		P.L MATCHING RESISTOR

Ref. No.	Part No.	Description		Remark
RV2006	1-224-937-00	Variable, 1k		VECTOR LEVEL R-Y
RV2007	1-224-937-00	Variable, 1k		VECTOR LEVEL B-Y

3. BC BOARD

♠ A-1135-082-A BC Board, complete E-253

CAPACITORS

Ref. No.	Part No.	Description			Remark
C3001	1-123-316-00	10	16V	elect	
C3002	1-101-004-00	0.01			
C3006	1-101-006-00	0.047			
C3008	1-123-316-00	10	16V	elect	
C3009, 3011	1-101-004-00	0.01			
C3012, 3013	1-123-316-00	10	16V	elect	
C3014, 3016, 3018	1-101-004-00	0.01			
C3019	1-102-678-00	100p	5%		
C3020	1-102-888-00	150p	5%		
C3021, 3022	1-102-687-00	100p	5%		
C3023	1-102-888-00	150p	5%		
C3024	1-102-824-00	470p	5%		
C3025–3029	1-101-004-00	0.01			
C3030	1-101-006-00	0.047			
C3031	1-101-004-00	0.01			
C3032	1-121-806-00	10	16V	elect (nonpolarized)	
C3033	1-101-004-00	0.01			
C3034	1-102-678-00	100p	5%		
C3035	1-102-888-00	150p	5%		
C3036, 3037	1-123-320-00	100	16V	elect	
C3038	1-101-006-00	0.047			
C3039	1-123-320-00	100	16V	elect	
C3040	1-101-006-00	0.047			
C3041–3043	1-123-320-00	100	16V	elect	
C3044	1-101-006-00	0.047			
C3045	1-123-320-00	100	16V	elect	
C3046	1-101-006-00	0.047			
C3047–3049	1-123-319-00	47	16V	elect	
C3050	1-101-006-00	0.047			
C3051–3053	1-101-004-00	0.01			
C3054, 3055	1-123-320-00	100	16V	elect	
C3056	1-123-316-00	10	16V	elect	

ICs

Ref. No.	Part No.	Description	Remark
IC3001–3004	8-759-240-53	TC4053BP	
IC3005	8-759-900-00	SN74LS00N	
IC3006	8-759-900-26	SN74LS26N	
IC3007–3009	8-759-901-23	SN74LS123N	
IC3010,3011	8-759-900-26	SN74LS26N	
IC3012	8-759-145-58	μPC4558C	
IC3013	8-759-901-23	SN74LS123N	

TRANSISTORS

Ref. No.	Part No.	Description	Remark
⇒ Q3001–3003	8-729-612-77	2SA1027R	
⇒ Q3007	8-729-612-77	2SA1027R	
⇒ Q3009–3017	8-729-612-77	2SA1027R	
Q3018–3020	8-724-375-01	2SC403C	
⇒ Q3021	8-729-612-77	2SA1027R	
Q3022	8-722-384-01	2SK23A-840	
⇒ Q3023	8-729-612-77	2SA1027R	
Q3024	8-722-384-01	2SK23A-840	
⇒ Q3025–3030	8-729-612-77	2SA1027R	
Q3031	8-729-663-47	2SC1364	
Q3032–3034	8-724-375-01	2SC403C	
⇒ Q3035–3037	8-729-612-77	2SA1027R	

• Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description		Remark
		RESISTORS		
R3001–3003	1-246-791-00	4.7k		carbon
R3004	1-246-771-00	100		carbon
R3008	1-214-138-00	1.8k	¼W	1% metal oxide
R3009	1-246-787-00	2.2k		carbon
R3010	1-214-147-00	4.3k	¼W	1% metal oxide
R3011	1-246-771-00	100		carbon
R3015	1-214-138-00	1.8k	¼W	1% metal oxide
R3016	1-246-787-00	2.2k		carbon
R3017	1-214-147-00	4.3k	¼W	1% metal oxide
R3018	1-246-771-00	100		carbon
R3022	1-214-138-00	1.8k	¼W	1% metal oxide
R3023	1-246-787-00	2.2k		carbon
R3024	1-214-147-00	4.3k	¼W	1% metal oxide
R3025	1-214-146-00	3.9k	¼W	1% metal oxide
R3026	1-214-096-00	33	¼W	1% metal oxide
R3027	1-214-155-00	9.1k	¼W	1% metal oxide
R3028	1-214-138-00	1.8k	¼W	1% metal oxide
R3029–3031	1-214-147-00	4.3k	¼W	1% metal oxide
R3038–3040	1-246-791-00	4.7k		carbon
R3041	1-214-153-00	7.5k	¼W	1% metal oxide
R3042	1-214-096-00	33	¼W	1% metal oxide
R3043	1-214-162-00	18k	¼W	1% metal oxide
R3044	1-246-795-00	10k		carbon
R3045	1-246-791-00	4.7k		carbon
R3046	1-246-795-00	10k		carbon
R3047	1-246-791-00	4.7k		carbon
R3048	1-246-795-00	10k		carbon
R3049	1-246-791-00	4.7k		carbon
R3050–3052	1-214-136-00	1.5k	¼W	1% metal oxide
R3053	1-246-787-00	2.2k		carbon
R3054	1-246-795-00	10k		carbon
R3055	1-246-854-00	7.5k		carbon
R3056	1-246-791-00	4.7k		carbon
R3057–3060	1-246-848-00	2.4k		carbon
R3061, 3062	1-246-795-00	10k		carbon
R3063	1-214-153-00	7.5	¼W	1% metal oxide
R3064	1-214-169-00	36k	¼W	1% metal oxide
R3065	1-246-848-00	2.4k		carbon
R3066	1-246-791-00	4.7k		carbon
R3067	1-214-136-00	1.5k	¼W	1% metal oxide

Ref. No.	Part No.	Description		Remark
R3068	1-214-154-00	8.2k	¼W	1% metal oxide
R3069	1-214-153-00	7.5	¼W	1% metal oxide
R3070	1-214-169-00	36k	¼W	1% metal oxide
R3071	1-246-848-00	2.4k		carbon
R3072	1-246-791-00	4.7k		carbon
R3073	1-214-136-00	1.5k	¼W	1% metal oxide
R3074	1-246-802-00	39k		carbon
R3075	1-214-141-00	2.4k	¼W	1% metal oxide
R3076, 3077	1-214-136-00	1.5k	¼W	1% metal oxide
R3078	1-214-141-00	2.4k	¼W	1% metal oxide
R3079	1-214-116-00	220	¼W	1% metal oxide
R3080–3082	1-246-795-00	10k		carbon
R3083	1-214-146-00	3.9k	¼W	1% metal oxide
R3084	1-246-791-00	4.7k		carbon
R3085	1-246-848-00	2.4k		carbon
R3086, 3087	1-246-791-00	4.7k		carbon
R3088	1-246-795-00	10k		carbon
R3089	1-202-473-11	5.6M 5%	¼W	composition
R3090	1-214-160-00	15k	¼W	1% metal oxide
R3091	1-246-795-00	10k		carbon
R3092	1-214-180-00	100k	¼W	1% metal oxide
R3093	1-246-783-00	1k		carbon
R3094	1-214-120-00	330	¼W	1% metal oxide
R3095	1-214-156-00	10k	¼W	1% metal oxide
R3096	1-246-795-00	10k		carbon
R3097	1-214-136-00	1.5k	¼W	1% metal oxide
R3098, 3099	1-214-162-00	18k	¼W	1% metal oxide
R3100	1-246-796-00	12k		carbon
R3101	1-246-795-00	10k		carbon
R3102	1-214-108-00	100	¼W	1% metal oxide
R3103	1-246-798-00	18k		
R3104	1-214-096-00	33	¼W	1% metal oxide
R3105	1-214-172-00	47K	¼W	1% metal oxide
RV3001	1-224-941-00	Variable, 20k		Y. SET UP LEVEL
RV3002	1-224-941-00	Variable, 20k		REG, SET UP LEVEL
RV3003	1-224-941-00	Variable, 20k		B.CL.P. WIDTH
RV3004	1-224-941-00	Variable, 20k		W.CL.P. WIDTH
RV3005	1-224-941-00	Variable, 20k		CHROMA CLAMP PULSE POSITION
RV3006	1-224-941-00	Variable, 20k		CHROMA CLAMP PULSE WIDTH
RV3007	1-224-934-00	Variable, 100		AGC P LEVEL

Ref. No.	Part No.	Description		Remark

4. BD BOARD

♦ A-1135-083-A BD Board, complete E-252

CAPACITORS

Ref. No.	Part No.	Description			Remark
C4001	1-102-865-00	8p		(0.5p)	
C4002	1-123-316-00	10	16V	elect	
C4003	1-108-638-00	0.1	100V	10% mylar	
C4004	1-101-006-00	0.047			
C4005	1-101-004-00	0.01			
C4006	1-123-316-00	10	16V	elect	
C4007	1-102-514-00	22p		0.5%	
C4008	1-108-638-00	0.1	100V	10% mylar	
C4009	1-101-004-00	0.01			
C4010	1-123-316-00	10	16V	elect	
C4011	1-102-508-00	10p		(0.5p)	
C4012	1-101-006-00	0.047			
C4013	1-108-638-00	0.1	100V	10% mylar	
C4014	1-101-006-00	0.047			
C4015	1-101-004-00	0.01			
C4016	1-102-865-00	8p		(0.5p)	
C4017	1-123-316-00	10	16V	elect	
C4018	1-108-638-00	0.1	100V	10% mylar	
C4019	1-101-006-00	0.047			
C4020	1-101-004-00	0.01			
C4021	1-123-316-00	10	16V	elect	
C4022	1-102-514-00	22p		0.5%	
C4023	1-108-638-00	0.1	100V	10% mylar	
C4024	1-101-004-00	0.01			
C4025	1-123-316-00	10	16V	elect	
C4026	1-102-865-00	8p		(0.5p)	
C4027	1-101-006-00	0.047			
C4028	1-108-638-00	0.1	100V	10% mylar	
C4029	1-101-006-00	0.047			
C4030	1-101-004-00	0.01			
C4031	1-102-865-00	8p		(0.5p)	
C4032	1-123-316-00	10	16V	elect	
C4033	1-108-638-00	0.1	100V	10% mylar	
C4034	1-101-006-00	0.047			
C4035	1-101-004-00	0.01			
C4036	1-123-316-00	10	16V	elect	
C4037	1-102-514-00	22p		0.5%	

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description			Remark
C4038	1-108-638-00	0.1	100V	10% mylar	
C4039	1-101-004-00	0.01			
C4040	1-123-316-00	10	16V	elect	
C4041	1-102-865-00	8p		(0.5p)	
C4042	1-101-006-00	0.047			
C4043	1-108-638-00	0.1	100V	10% mylar	
C4044	1-101-006-00	0.047			
C4045	1-101-004-00	0.01			
C4046–4048	1-121-257-00	4.7	16	elect (nonpolarized)	
C4049	1-102-865-00	8p		(0.5p)	
C4050	1-123-316-00	10	16V	elect	
C4051	1-108-389-00	0.1	100V	10% mylar	
C4052	1-101-006-00	0.047			
C4053	1-101-004-00	0.01			
C4054	1-121-257-00	4.7	16V	elect (nonpolarized)	
C4055	1-108-634-00	0.047	100V	10% mylar	
C4056, 4057	1-101-004-00	0.01			
C4058	1-108-626-00	0.01	100V	10% mylar	
C4059	1-101-006-00	0.047			
C4060	1-101-006-00	0.047			
C4061	1-123-316-00	10	16V	elect	
C4062	1-123-320-00	100	16V	elect	
C4063	1-101-006-00	0.047			
C4064	1-123-320-00	100	16V	elect	
C4065	1-101-006-00	0.047			
C4066–4070	1-123-319-00	47	16V	elect	
C4071	1-101-006-00	0.047			
C4072	1-123-319-00	47	16V	elect	
C4073	1-101-006-00	0.047			
C4074	1-102-973-00	100p		5%	
C4075	1-101-004-00	0.01			
C4076–4080	1-123-319-00	47	16V	elect	

DIODES

Ref. No.	Part No.	Description	Remark
⇒ D4001	8-719-931-05	EQB01-05	
D4002	8-719-815-55	1S1555	
⇒ D4003	8-719-931-05	EQB01-05	
D4004	8-719-815-55	1S1555	
⇒ D4005	8-719-931-05	EQB01-05	
D4006	8-719-815-55	1S1555	
D4007	8-719-815-55	1S1555	

Ref. No.	Part No.	Description	Remark
		ICs	
IC4001	8-757-182-20	CX718D	
IC4002	8-757-182-20	CX718D	
IC4003	8-759-145-58	μPC4558C	
		COILS	
L4001–4003	1-407-178-41	1.00μH 5%	
		TRANSISTORS	
Q4001–4003	8-724-375-01	2SC403C	
⇒ Q4004	8-723-301-01	2SK43-11	
⇒ Q4005,4006	8-729-612-77	2SA1027R	
Q4007,4008	8-729-375-01	2SC403C	
⇒ Q4009	8-723-301-01	2SK43-11	
⇒ Q4010	8-729-612-77	2SA1027R	
Q4011,4012	8-729-375-01	2SC403C	
⇒ Q4013	8-729-612-77	2SA1027R	
Q4014–4016	8-724-375-01	2SC403C	
⇒ Q4017	8-723-301-01	2SK43-11	
⇒ Q4018	8-729-612-77	2SA1027R	
Q4019–4021	8-724-375-01	2SC403C	
⇒ Q4022	8-723-301-01	2SK43-11	
⇒ Q4023,4024	8-729-612-77	2SA1027R	
Q4025,4026	8-724-375-01	2SC403C	
⇒ Q4027	8-723-301-01	2SK43-11	
⇒ Q4028	8-729-612-77	2SA1027R	
Q4029,4030	8-724-375-01	2SC403C	
⇒ Q4031	8-729-612-77	2SA1027R	
Q4032–4034	8-724-375-01	2SC403C	
⇒ Q4035	8-723-301-01	2SK43-11	
⇒ Q4036	8-729-612-77	2SA1027R	
Q4037–4039	8-724-375-01	2SC403C	
⇒ Q4040	8-723-301-01	2SK43-11	
⇒ Q4041,4042	8-729-612-77	2SA1027R	
Q4043,4044	8-724-375-01	2SC403C	
⇒ Q4045	8-723-301-01	2SK43-11	
⇒ Q4046	8-729-612-77	2SA1027R	
Q4047,4048	8-724-375-01	2SC403C	
⇒ Q4049	8-729-612-77	2SA1027R	
Q4050–4052	8-724-375-01	2SC403C	
⇒ Q4053	8-723-301-01	2SK43-11	
⇒ Q4054	8-729-612-77	2SA1027R	
Q4055–4057	8-724-375-01	2SC403C	

Ref. No.	Part No.	Description	Remark
⇒ Q4058	8-723-301-01	2SK43-11	
Q4059	8-724-375-01	2SC403C	
⇒ Q4060	8-723-301-01	2SK43-11	
⇒ Q4061	8-729-612-77	2SA1027R	
Q4062	8-724-375-01	2SC403C	
⇒ Q4063	8-723-301-01	2SK43-11	
⇒ Q4064	8-729-612-77	2SA1027R	
		RESISTORS	
R4001	1-246-777-00	330	carbon
R4002, 4003	1-246-795-00	10k	carbon
R4004	1-246-771-00	100	carbon
R4005	1-214-129-00	750 ¼W	1% metal oxide
R4006	1-246-783-00	1.0k	carbon
R4007	1-246-792-00	5.6k	carbon
R4008	1-246-783-00	1.0k	carbon
R4009	1-246-771-00	100	carbon
R4010	1-202-473-11	5.6M 5% ¼W	composition
R4011	1-246-795-00	10k	carbon
R4012	1-202-473-11	5.6M 5% ¼W	composition
R4013	1-214-126-00	560 ¼W	1% metal oxide
R4014	1-214-146-00	3.9k ¼W	1% metal oxide
R4015	1-214-155-00	9.1k ¼W	1% metal oxide
R4016	1-214-132-00	1k ¼W	1% metal oxide
R4017	1-246-771-00	100	carbon
R4018	1-214-144-00	3.3k ¼W	1% metal oxide
R4019	1-246-797-00	15k	carbon
R4020	1-214-136-00	1.5k ¼W	1% metal oxide
R4021	1-214-145-00	3.6k ¼W	1% metal oxide
R4022	1-214-144-00	3.3k ¼W	1% metal oxide
R4023	1-246-771-00	100	carbon
R4024	1-246-795-00	10k	carbon
R4025	1-202-473-11	5.6M 5% ¼W	composition
R4026	1-246-795-00	10k	carbon
R4027	1-214-134-00	1.2k ¼W	1% metal oxide
R4029	1-214-162-00	18k ¼W	1% metal oxide
R4030	1-246-791-00	100	carbon
R4031	1-209-773-00	4.7k	carbon
R4032	1-246-771-00	100	carbon

Ref. No.	Part No.	Description		Remark
R4033	1-246-795-00	10k		carbon
R4034	1-246-771-00	100		carbon
R4035	1-214-123-00	430	¼W	1% metal oxide
R4036	1-246-783-00	1.0k		carbon
R4037	1-246-792-00	5.6k		carbon
R4038	1-246-783-00	1.0k		carbon
R4039	1-246-771-00	100		carbon
R4040	1-202-473-11	5.6M	5% ¼W	composition
R4041	1-246-795-00	10k		carbon
R4042	1-202-473-11	5.6M	5% ¼W	composition
R4043	1-214-124-00	470	¼W	1% metal oxide
R4044	1-214-136-00	1.5k	¼W	1% metal oxide
R4045	1-246-777-00	330		carbon
R4046, 4047	1-246-795-00	10k		carbon
R4048	1-246-771-00	100		carbon
R4049	1-214-129-00	750	¼W	1% metal oxide
R4050	1-246-783-00	1.0k		carbon
R4051	1-246-792-00	5.6k		carbon
R4052	1-246-783-00	1.0k		carbon
R4053	1-246-771-00	100		carbon
R4054	1-202-473-11	5.6M	5% ¼W	composition
R4055	1-246-795-00	10k		carbon
R4056	1-202-473-11	5.6M	5% ¼W	composition
R4057	1-214-126-00	560	¼W	1% metal oxide
R4058	1-214-151-00	6.2k	¼W	1% metal oxide
R4059	1-214-155-00	9.1k	¼W	1% metal oxide
R4060	1-214-132-00	1k	¼W	1% metal oxide
R4061	1-246-771-00	100		carbon
R4062	1-214-144-00	3.3k	¼W	1% metal oxide
R4063	1-246-797-00	15k		carbon
R4064	1-214-136-00	1.5k	¼W	1% metal oxide
R4065	1-214-145-00	3.6k	¼W	1% metal oxide
R4066	1-214-144-00	3.3k	¼W	1% metal oxide
R4067	1-246-771-00	100		carbon
R4068	1-246-795-00	10k		carbon
R4069	1-202-473-11	5.6M	5% ¼W	composition
R4070	1-246-795-00	10k		carbon
R4071	1-214-134-00	1.2k	¼W	1% metal oxide
R4072	1-214-128-00	680	¼W	1% metal oxide
R4073	1-214-162-00	18k	¼W	1% metal oxide
R4074	1-246-771-00	100		carbon
R4075	1-246-791-00	4.7k		carbon
R4076	1-246-771-00	100		carbon
R4077	1-246-795-00	10k		carbon
R4078	1-246-771-00	100		carbon

Ref. No.	Part No.	Description		Remark
R4079	1-214-123-00	430	¼W	1% metal oxide
R4080	1-246-783-00	1.0k		carbon
R4081	1-246-792-00	5.6k		carbon
R4082	1-246-783-00	1.0k		carbon
R4083	1-246-771-00	100		carbon
R4084	1-202-473-11	5.6M	5% ¼W	composition
R4085	1-246-795-00	10k		carbon
R4086	1-202-473-11	5.6M	5% ¼W	composition
R4087	1-214-124-00	470	¼W	1% metal oxide
R4088	1-214-136-00	1.5k	¼W	1% metal oxide
R4089	1-246-777-00	330		carbon
R4090, 4091	1-246-795-00	10k		carbon
R4092	1-246-771-00	100		carbon
R4093	1-214-129-00	750	¼W	1% metal oxide
R4094	1-246-783-00	1.0k		carbon
R4095	1-246-792-00	5.6k		carbon
R4096	1-246-783-00	1.0k		carbon
R4097	1-246-771-00	100		carbon
R4098	1-202-473-11	5.6M	5% ¼W	composition
R4099	1-246-795-00	10k		carbon
R4100	1-202-473-11	5.6M	5% ¼W	composition
R4101	1-214-126-00	560	¼W	1% metal oxide
R4102	1-214-146-00	3.9k	¼W	1% metal oxide
R4103	1-214-155-00	9.1k	¼W	1% metal oxide
R4104	1-214-132-00	1k	¼W	1% metal oxide
R4105	1-246-771-00	100		carbon
R4106	1-214-144-00	3.3k	¼W	1% metal oxide
R4107	1-246-797-00	15k		carbon
R4108	1-214-136-00	1.5k	¼W	1% metal oxide
R4109	1-214-145-00	3.6k	¼W	1% metal oxide
R4110	1-214-144-00	3.3k	¼W	1% metal oxide
R4111	1-246-771-00	100		carbon
R4112	1-246-795-00	10k		carbon
R4113	1-202-473-11	5.6M	5% ¼W	composition
R4114	1-246-795-00	10k		carbon
R4115	1-214-134-00	1.2k	¼W	1% metal oxide
R4117	1-214-162-00	18k	¼W	1% metal oxide
R4118	1-246-771-00	100		carbon
R4119	1-246-791-00	4.7k		carbon
R4120	1-246-771-00	100		carbon
R4121	1-246-795-00	10k		carbon
R4122	1-246-771-00	100		carbon
R4123	1-214-123-00	430	¼W	1% metal oxide
R4124	1-246-783-00	1.0k		carbon
R4125	1-246-792-00	5.6k		carbon

Ref. No.	Part No.	Description	Remark
R4126	1-246-783-00	1.0k carbon	
R4127	1-246-771-00	100 carbon	
R4128	1-202-473-11	5.6M 5% ¼W composition	
R4129	1-246-795-00	10k carbon	
R4130	1-202-473-11	5.6M 5% ¼W composition	
R4131	1-214-124-00	470 ¼W 1% metal oxide	
R4132	1-214-136-00	1.5k ¼W 1% metal oxide	
R4133	1-246-777-00	330 carbon	
R4134, 4135	1-246-795-00	10k carbon	
R4136	1-246-771-00	100 carbon	
R4137	1-214-132-00	1k ¼W 1% metal oxide	
R4138	1-246-783-00	1.0k carbon	
R4139	1-246-792-00	5.6k carbon	
R4140	1-246-783-00	1.0k carbon	
R4141	1-246-771-00	100 carbon	
R4142	1-202-473-11	5.6M 5% ¼W composition	
R4143	1-246-795-00	10k carbon	
R4144	1-202-473-11	5.6M 5% ¼W composition	
R4145	1-214-132-00	1k ¼W 1% metal oxide	
R4146	1-246-791-00	4.7k carbon	
R4147	1-246-771-00	100 carbon	
R4148	1-246-795-00	10k carbon	
R4149	1-202-473-11	5.6M 5% ¼W composition	
R4150, 4151	1-246-799-00	22k carbon	
R4152	1-246-795-00	10k carbon	
R4153	1-202-473-11	5.6M 5% ¼W composition	
R4154	1-246-796-00	12k carbon	
R4155	1-214-157-00	11k ¼W 1% metal oxide	
R4156	1-214-179-00	91k ¼W 1% metal oxide	
R4157, 4158	1-246-795-00	10k carbon	
R4159	1-246-783-00	1.0k carbon	
R4160	1-246-793-00	6.8k carbon	
R4161	1-246-790-00	3.9k carbon	
R4162	1-246-795-00	10k carbon	
R4163–4165	1-246-780-00	560 carbon	
R4166–4168	1-246-771-00	100 carbon	
R4169	1-246-795-00	10k carbon	
R4170	1-214-146-00	3.9k ¼W 1% metal oxide	
RV4001	1-224-939-00	Variable, 5k	R.BRT.P. LEVEL
RV4002	1-224-939-00	Variable, 5k	B.BRT. P LEVEL
RV4003	1-224-938-00	Variable, 2k	R. PEAK LIMIT
RV4004	1-224-938-00	Variable, 2k	B.BRT. P LEVEL

5. BE BOARD

Ref. No.	Part No.	Description	Remark
	♦ A-1135-084-A	BE Board, complete	E-251

CAPACITORS

Ref. No.	Part No.	Description	Remark
C5002	1-123-316-00	10 16V elect	
C5003	1-101-006-00	0.047	
C5004	1-101-332-00	47 25V elect	
C5005	1-108-638-00	0.1 100V 10% mylar	
C5006	1-123-352-00	1 50V elect	
C5007	1-101-004-00	0.01	
C5008	1-108-638-00	0.1 100V 10% mylar	
C5009	1-101-004-00	0.01	
C5010	1-107-045-00	3.9p 500V 1% mica	
C5011	1-101-004-00	0.01	
C5012	1-108-634-00	0.047 100V 10% mylar	
C5013, 5014	1-101-004-00	0.01	
C5015	1-108-634-00	0.047 100V 10% mylar	
C5016, 5018	1-101-004-00	0.01	
C5021	1-123-316-00	10 16V elect	
C5022	1-101-006-00	0.047	
C5023	1-123-332-00	47 25V elect	
C5024	1-108-638-00	0.1 100V 10% mylar	
C5025	1-123-352-00	1 50V elect	
C5026	1-101-004-00	0.01	
C5027	1-108-638-00	0.1 100V 10% mylar	
C5028	1-101-004-00	0.01	
C5029	1-107-045-00	3.9p 500V 1% mica	
C5030	1-101-004-00	0.01	
C5031	1-108-634-00	0.047 100V 10% mylar	
C5032, 5033	1-101-004-00	0.01	
C5034	1-108-634-00	0.047 100V 10% mylar	
C5035, 5037	1-101-004-00	0.01	
C5040	1-123-316-00	10 16V elect	
C5041	1-101-006-00	0.047	
C5042	1-123-332-00	47 25V elect	
C5043	1-108-638-00	0.1 100V 10% mylar	
C5044	1-123-352-00	1 50V elect	
C5045	1-101-004-00	0.01	
C5046	1-108-638-00	0.1 100V 10% mylar	

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Ref. No.	Part No.	Description	Remark
C5047	1-101-004-00	0.01	
C5048	1-107-045-00	3.9p 500V 1% mica	
C5049	1-101-004-00	0.01	
C5050	1-108-634-00	0.047 100V 10% mylar	
C5051, 5052	1-101-004-00	0.01	
C5053	1-108-634-00	0.047 100V 10% mylar	
C5054, 5056	1-101-004-00	0.01	
C5058–5061	1-123-320-00	100 16V elect	
C5062–5067	1-123-319-00	47 16V elect	
C5068	1-123-384-00	10 100V elect	
C5069	1-123-344-00	47 35V elect	
C5070–5075	1-101-006-00	0.047	
C5076, 5077	1-123-320-00	100 16V elect	
C5078–5080	1-123-319-00	47 16V elect	
C5081, 5082	1-123-344-00	47 35V elect	
C5083, 5084	1-123-384-00	10 100V elect	
CV5001	1-141-147-XX	Trimer, 15p	R FREQ
CV5002	1-141-147-XX	Trimer, 15p	G FREQ
CV5003	1-141-147-XX	Trimer, 15p	B FREQ

DIODES

Ref. No.	Part No.	Description	Remark
⇒ D5001	8-719-931-05	EQB01-05	
⇒ D5002	8-719-931-06	EQB01-06	
D5003–5005	8-719-815-55	1S1555	
D5006	8-719-200-02	10E2	
⇒ D5007	8-719-931-05	EQB01-05	
⇒ D5008	8-719-931-06	EQB01-06	
D5009–5011	8-719-815-55	1S1555	
D5012	8-719-200-02	10E2	
⇒ D5013	8-719-931-05	EQB01-05	
⇒ D5014	8-719-931-06	EQB01-06	
D5015–5017	8-719-815-55	1S1555	
D5018	8-719-200-02	10E2	

ICs

Ref. No.	Part No.	Description	Remark
IC5001–5003	8-759-145-58	μPC4558C	

TRANSISTORS

Ref. No.	Part No.	Description	Remark
⇒ Q5001	8-729-612-77	2SA1027R	
Q5002	8-724-375-01	2SC403C	
⇒ Q5003,5004	8-729-612-77	2SA1027R	
Q5005	8-765-300-00	2SC2009	
Q5006	8-729-322-78	2SC2278	
⇒ Q5007	8-729-366-81	2SD668	
Q5008	8-729-989-93	2SA899	
⇒ Q5009	8-723-301-01	2SK43-11	
Q5010	8-761-622-00	2SC1636	
⇒ Q5011,5013	8-723-301-01	2SK43-11	
⇒ Q5014	8-729-612-77	2SA1027R	
Q5015	8-724-375-01	2SC403C	
⇒ Q5016,5017	8-729-612-77	2SA1027R	
Q5018	8-765-300-00	2SC2009	
Q5019	8-729-322-78	2SC2278	
⇒ Q5020	8-729-366-81	2SD668	
Q5021	8-729-989-93	2SA899	
⇒ Q5022	8-723-301-01	2SK43-11	
Q5023	8-761-622-00	2SC1636	
⇒ Q5024,5026	8-723-301-01	2SK43-11	
⇒ Q5027	8-729-612-77	2SA1027R	
Q5028	8-724-375-01	2SC403C	
⇒ Q5029,5030	8-729-612-77	2SA1027R	
Q5031	8-765-300-00	2SC2009	
Q5032	8-729-322-78	2SC2278	
⇒ Q5033	8-729-366-81	2SD668	
Q5034	8-729-989-93	2SA899	
⇒ Q5035	8-723-301-01	2SK43-11	
Q5036	8-761-622-00	2SC1636	
⇒ Q5037,5039	8-723-301-01	2SK43-11	

RESISTORS

Ref. No.	Part No.	Description		Remark
R5001	1-246-771-00	100		carbon
R5002	1-214-128-00	680	¼W	1% metal oxide
R5003	1-214-138-00	1.8k	¼W	1% metal oxide
R5004	1-246-776-00	270		carbon
R5005	1-246-788-00	2.7k		carbon
R5006	1-246-771-00	100		carbon
R5007	1-214-136-00	1.5k	¼W	1% metal oxide
R5008	1-214-150-00	5.6k	¼W	1% metal oxide
R5009	1-246-793-00	6.8k		carbon
R5010	1-246-797-00	15k		carbon
R5011	1-246-771-00	100		carbon
R5012	1-246-796-00	12k		carbon
R5013	1-246-771-00	100		carbon
R5014	1-206-737-00	3.3k	3W	metal oxide (nonflammable)
R5015	1-214-142-00	2.7k	¼W	1% metal oxide
R5016, 5017	1-214-116-00	220	¼W	1% metal oxide
R5018, 5019	1-246-759-00	10		carbon
R5020	1-212-692-00	39k	½W	1% metal oxide
R5021	1-214-180-00	100k	¼W	1% metal oxide
R5022	1-214-151-00	6.2k	¼W	1% metal oxide
R5023	1-246-795-00	10k		carbon
R5024	1-202-473-11	5.6M	5% ¼W	composition
R5025	1-246-790-00	3.9k		carbon
R5026	1-214-178-00	82k	¼W	1% metal oxide
R5027	1-214-175-00	62k	¼W	1% metal oxide
R5028	1-214-173-00	51k	¼W	1% metal oxide
R5029	1-214-162-00	18k	¼W	1% metal oxide
R5030	1-246-795-00	10k		carbon
R5031	1-214-180-00	100k	¼W	1% metal oxide
R5032	1-214-151-00	6.2k	¼W	1% metal oxide
R5033, 5034	1-246-795-00	10k		carbon
R5035	1-202-473-00	5.6M	¼W	composition
R5036	1-214-170-00	39k	¼W	1% metal oxide
R5037	1-246-795-00	10k		carbon
R5038	1-202-473-11	5.6M	5% ¼W	composition
R5039	1-246-795-00	10k		carbon
R5040	1-214-162-00	18k	¼W	1% metal oxide
R5041	1-214-179-00	91k	¼W	1% metal oxide
R5042	1-214-149-00	5.1k	¼W	1% metal oxide
R5043	1-246-795-00	10k		carbon
R5044	1-246-771-00	100		carbon
R5045	1-214-128-00	680	¼W	1% metal oxide
R5046	1-214-138-00	1.8k	¼W	1% metal oxide
R5047	1-246-776-00	270		carbon
R5048	1-246-788-00	2.7k		carbon
R5049	1-246-771-00	100		carbon
R5050	1-214-136-00	1.5k	¼W	1% metal oxide
R5051	1-214-150-00	5.6k	¼W	1% metal oxide
R5052	1-246-793-00	6.8k		carbon
R5053	1-246-797-00	15k		carbon
R5054	1-246-771-00	100		carbon
R5055	1-246-796-00	12k		carbon
R5056	1-246-771-00	100		carbon
R5057	1-206-737-00	3.3k	3W	metal oxide (nonflammable)
R5058	1-214-142-00	2.7k	¼W	1% metal oxide
R5059, 5060	1-214-116-00	220	¼W	1% metal oxide
R5061, 5062	1-246-759-00	10		carbon
R5063	1-212-692-00	39k	½W	1% metal oxide (?)
R5064	1-214-180-00	100k	¼W	1% metal oxide
R5065	1-214-151-00	6.2k	¼W	1% metal oxide
R5066	1-246-795-00	10k		carbon
R5067	1-202-473-11	5.6M	5% ¼W	composition
R5068	1-246-790-00	3.9k		carbon
R5069	1-214-178-00	82k	¼W	1% metal oxide
R5070	1-214-175-00	62k	¼W	1% metal oxide
R5071	1-214-173-00	51k	¼W	1% metal oxide
R5072	1-214-162-00	18k	¼W	1% metal oxide
R5073	1-246-795-00	10k		carbon
R5074	1-214-180-00	100k	¼W	1% metal oxide
R5075	1-214-151-00	6.2k	¼W	1% metal oxide
R5076, 5077	1-246-795-00	10k		carbon
R5078	1-202-473-11	5.6M	5% ¼W	composition
R5079	1-214-172-00	47k	¼W	1% metal oxide
R5080	1-246-795-00	10k		carbon
R5081	1-202-473-11	5.6M	5% ¼W	composition
R5082	1-246-795-00	10k		carbon
R5083	1-214-162-00	18k	¼W	1% metal oxide
R5084	1-214-179-00	91k	¼W	1% metal oxide
R5085	1-214-149-00	5.1k	¼W	1% metal oxide
R5086	1-246-795-00	10k		carbon
R5087	1-246-771-00	100		carbon
R5088	1-214-128-00	680	¼W	1% metal oxide
R5089	1-214-138-00	1.8k	¼W	1% metal oxide
R5090	1-246-776-00	270		carbon
R5091	1-246-788-00	2.7k		carbon

Ref. No.	*Part No.*	*Description*		*Remark*
R5092	1-246-771-00	100		carbon
R5093	1-214-136-00	1.5k	¼W	1% metal oxide
R5094	1-214-150-00	5.6k	¼W	1% metal oxide
R5095	1-246-793-00	6.8k		carbon
R5096	1-246-797-00	15k		carbon
R5097	1-246-771-00	100		carbon
R5098	1-246-796-00	12k		carbon
R5099	1-246-771-00	100		carbon
R5100	1-206-737-00	3.3k	3W	metal oxide (nonflammable)
R5101	1-214-142-00	2.7	¼W	1% metal oxide
R5102, 5103	1-214-116-00	220	¼W	1% metal oxide
R5104, 5105	1-246-759-00	10		carbon
R5106	1-212-692-00	39k	½W	1% metal oxide
R5107	1-214-180-00	100k	¼W	1% metal oxide
R5108	1-214-151-00	6.2k	¼W	1% metal oxide
R5109	1-246-795-00	10k		carbon
R5110	1-202-473-11	5.6M	5% ¼W	composition
R5111	1-246-790-00	3.9k		carbon
R5112	1-214-178-00	82k	¼W	1% metal oxide
R5113	1-214-175-00	62k	¼W	1% metal oxide
R5114	1-214-173-00	51k	¼W	1% metal oxide
R5115	1-214-162-00	18k	¼W	1% metal oxide
R5116	1-246-795-00	10k		carbon
R5117	1-214-180-00	100k	¼W	1% metal oxide
R5118	1-214-151-00	6.2k	¼W	1% metal oxide
R5119, 5120	1-246-795-00	10k		carbon
R5121	1-202-473-11	5.6M	5% ¼W	composition
R5122	1-214-174-00	56k	¼W	1% metal oxide
R5123	1-246-795-00	10k		carbon
R5124	1-202-473-11	5.6M	5% ¼W	composition
R5125	1-246-795-00	10k		carbon
R5126	1-214-162-00	18k	¼W	1% metal oxide
R5127	1-214-179-00	91k	¼W	1% metal oxide
R5128	1-214-149-00	5.1k	¼W	1% metal oxide
R5129	1-246-795-00	10k		carbon
RV5001	1-226-698-00	Variable 10k		R. BKG
RV5002	1-224-941-00	Variable 20k		R. DRIVE
RV5003	1-226-698-00	Variable 10k		G. BKG
RV5004	1-224-941-00	Variable 20k		G. DRIVE
RV5005	1-226-698-00	Variable 10k		B. BKG
RV5006	1-224-941-00	Variable 20k		B. DRIVE

Ref. No.	*Part No.*	*Description*		*Remark*
6. C BOARD				
	♦ 1-600-366-00	C BOARD		E-52

CAPACITOR

C701	1-129-953-00	0.068M	1.5KV	polypropylene

RESISTORS

R701	1-202-838-00	100k	½W	composition
R702, 703	1-202-818-00	1k	½W	composition
R704,	1-202-838-00	100k	½W	composition
R705, 706	1-202-818-00	1k	½W	composition

MISCELLANEOUS

SG701–706	1-519-063-XX	Spark Gap
	1-526-086-XX	Socket, picture tube

● Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

7. DA BOARD

Ref. No.	Part No.	Description			Remark
	♦ A-1345-242-A	DA Board, completed			E-203

CAPACITORS

Ref. No.	Part No.	Description		
C6001–6012	1-101-004-00	0.01		
C6013	1-123-316-00	10	16V	elect
C6014	1-108-642-00	0.22	100V	10% mylar
C6015	1-108-632-00	0.033	100V	10% mylar
C6016–6018	1-108-634-00	0.047	100V	10% mylar
C6019	1-121-806-00	10	16V	elect (nonpolarized)
C6020	1-123-328-00	4.7	25V	elect
C6021	1-130-270-00	0.1	100V	5% Film
C6022	1-121-806-00	10	16V	elect (nonpolarized)
C6023	1-123-351-00	0.47	50V	elect
C6024	1-108-632-00	0.033	100V	10% mylar
C6025	1-130-270-00	0.1	100V	5% film
C6026–6028	1-101-004-00	0.01		
C6029	1-108-634-00	0.047	100V	10% mylar
C6030–6032	1-123-319-00	47	16V	elect
C6033	1-108-630-00	0.022	100V	10% mylar
C6034	1-129-899-00	0.056	100V	2% film
C6035	1-108-626-00	0.01	100V	10% mylar
C6036	1-129-899-00	0.056	100V	2% film
C6037	1-108-634-00	0.047	100V	10% mylar
C6038	1-108-626-00	0.01	100V	10% mylar
C6039	1-123-319-00	47	16V	elect
C6040	1-130-270-00	0.1	100V	5% film
C6041	1-123-353-00	2.2	50V	elect
C6042–6044	1-101-004-00	0.01		
C6045, 6046	1-130-270-00	0.1	100V	5% film
C6047, 6048	1-123-319-00	47	16V	elect
C6049–6051	1-101-004-00	0.01		
C6052	1-123-352-00	1	50V	elect
C6053	1-123-352-00	1	50V	elect
C6054	1-108-642-00	0.22	100V	10% mylar
C6055	1-123-352-00	1	50V	elect
C6056	1-123-630-00	0.022	100V	10% mylar
C6057	1-102-824-00	470p		5%
C6058	1-123-320-00	100	16V	elect
C6059	1-123-316-00	10	16V	elect
C6060	1-129-927-00	0.015	100V	5% polypropylene
C6061	1-106-188-00	0.0047	100V	5% mylar
C6062	1-123-319-00	47	16V	elect
C6063	1-108-636-00	0.068	100V	10% mylar
C6064	1-121-806-00	10	16V	elect (nonpolarized)
C6065, 6066	1-102-848-00	180p		5%
C6067, 6068	1-123-319-00	47	16V	elect
C6069	1-102-973-00	100p		5%
C6070	1-101-004-00	0.01		
C6071	1-130-072-00	0.022	100V	2% polypropylene

DIODES

Ref. No.	Part No.	Description
D6001	8-719-815-55	1S1555
D6002	8-719-815-55	1S1555
D6003	8-719-815-55	1S1555
D6004	8-719-815-55	1S1555
D6005	8-719-815-55	1S1555
D6007	8-719-815-55	1S1555
D6008	8-719-815-55	1S1555
D6009	8-719-815-55	1S1555
D6010	8-719-815-55	1S1555
D6011	8-719-815-55	1S1555
⇒ D6012	8-719-022-21	1T22AM
⇒ D6013	8-719-022-21	1T22AM
D6014	8-719-815-55	1S1555
D6015	8-719-815-55	1S1555

ICs

Ref. No.	Part No.	Description
IC6001	8-759-145-58	μPC4558C
IC6002	8-759-145-58	μPC4558C
IC6003	8-759-115-55	μPC1555C
IC6004	8-759-115-55	μPC1555C
IC6005	8-759-900-00	SN74LS00N
IC6006	8-759-145-58	μPC4558C
IC6007	8-759-145-58	μPC4558C
IC6008	8-751-580-10	CX158
IC6009	8-759-901-23	SN74LS123N

COILS

Ref. No.	Part No.	Description	
L6001	1-408-243-21	12mH	5%
L6002	1-408-160-00	15.75mH	5%
L6003, 6004	1-408-243-21	12mH	5%

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	*Part No.*	*Description*		*Remark*
		TRANSISTORS		
⇒ Q6001	8-729-612-77	2SA1027R		
Q6002,6003	8-729-663-47	2SC1364		
Q6004	8-729-306-92	2SD669A		
Q6005	8-729-304-92	2SB649A		
Q6006	8-729-663-47	2SC1364		
Q6007	8-729-306-92	2SD669A		
Q6008	8-729-304-92	2SB649A		
Q6009	8-729-663-47	2SC1364		
⇒ Q6010	8-729-612-77	2SA1027R		
Q6011	8-729-663-47	2SC1364		
Q6012–6014	8-761-622-00	2SC1636		
⇒ Q6015	8-729-612-77	2SA1027R		
Q6016–6033	8-729-663-47	2SC1364		
		RESISTORS		
R6001	1-214-178-00	82k	¼W	1% metal oxide
R6002	1-214-162-00	18k	¼W	1% metal oxide
R6003	1-214-178-00	82k	¼W	1% metal oxide
R6004	1-214-162-00	18k	¼W	1% metal oxide
R6005	1-214-178-00	82k	¼W	1% metal oxide
R6006	1-214-162-00	18k	¼W	1% metal oxide
R6007	1-246-787-00	2.2k		carbon
R6008	1-246-771-00	100		carbon
R6009	1-213-155-00	10k	1W	metal oxide (nonflammable)
R6010	1-246-797-00	15k		carbon
R6011	1-246-849-00	3k		carbon
R6012	1-246-836-00	240		carbon
R6013	1-246-795-00	10k		carbon
R6014	1-246-799-00	22k		carbon
R6015, 6016	1-246-787-00	2.2k		carbon
R6017	1-246-859-00	20k		carbon
R6018	1-246-772-00	120		carbon
R6019	1-246-787-00	2.2k		carbon
R6020, 6021	1-246-981-00	4.7		carbon (nonflammable)
R6022	1-246-795-00	10k		carbon
R6023	1-214-180-00	100k	¼W	1% metal oxide
R6024	1-246-803-00	47k		carbon
R6025	1-246-807-00	100k		carbon
R6026, 6027	1-246-795-00	10k		carbon
R6028	1-212-718-00	470k	½W	1% metal oxide

Ref. No.	*Part No.*	*Description*		*Remark*
R6029	1-246-807-00	100k		carbon
R6030	1-213-127-00	47	1W	metal oxide (nonflammable)
R6031	1-246-866-00	75k		carbon
R6032	1-246-795-00	10k		carbon
R6033	1-247-059-00	620k		carbon
R6034	1-246-762-00	18		carbon
R6035	1-246-786-00	1.8k		carbon
R6036, 6037	1-246-981-00	4.7		carbon (nonflammable)
R6038, 6039	1-213-137-00	330	1W	metal oxide (nonflammable)
R6040	1-246-803-00	47k		carbon
R6041	1-246-807-00	100k		carbon
R6042	1-212-718-00	470k	½W	1% metal oxide
R6043	1-246-771-00	100		carbon
R6044	1-214-156-00	10k	¼W	1% metal oxide
R6045	1-214-154-00	8.2k	¼W	1% metal oxide
R6046	1-214-138-00	1.8k	¼W	1% metal oxide
R6047	1-214-156-00	10k	¼W	1% metal oxide
R6048	1-214-180-00	100k	¼W	1% metal oxide
R6049	1-214-132-00	1k	¼W	1% metal oxide
R6050	1-214-164-00	22k	¼W	1% metal oxide
R6051	1-246-807-00	100k		carbon
R6052	1-214-116-00	220	¼W	1% metal oxide
R6053	1-214-160-00	15k	¼W	1% metal oxide
R6054	1-214-125-00	510	¼W	1 % metal oxide
R6055, 6056	1-246-807-00	100k		carbon
R6057	1-214-150-00	5.6k	¼W	1% metal oxide
R6058	1-214-152-00	6.8k	¼W	1% metal oxide
R6059, 6060	1-246-783-00	1k		carbon
R6061	1-246-795-00	10k		carbon
R6062	1-214-152-00	6.8k	¼W	1% metal oxide
R6063	1-214-150-00	5.6k	¼W	1% metal oxide
R6064	1-246-803-00	47k		carbon
R6065	1-246-807-00	100k		carbon
R6066	1-246-789-00	3.3k		carbon
R6067	1-246-864-00	51k		carbon
R6068	1-246-795-00	10k		carbon
R6069	1-246-848-00	2.4k		carbon
R6070	1-246-795-00	10k		carbon
R6072	1-246-803-00	47k		carbon
R6073	1-246-783-00	1.0k		carbon
R6074, 6075	1-246-803-00	47k		carbon

Ref. No.	*Part No.*	*Description*		*Remark*
R6076	1-246-795-00	10k		carbon
R6077	1-246-791-00	4.7k		carbon
R6078	1-214-156-00	10k	¼W	1% metal oxide
R6079	1-246-783-00	1.0k		carbon
R6080-6086	1-246-795-00	10k		carbon
R6087	1-246-864-00	51k		carbon
R6088	1-246-795-00	10k		carbon
R6089	1-246-783-00	1.0k		carbon
R6090	1-246-864-00	51k		carbon
R6091	1-246-795-00	10k		carbon
R6092	1-246-783-00	1.0k		carbon
R6093	1-214-790-00	2.2M	½W	1% metal oxide
R6094	1-246-803-00	47k		carbon
R6095	1-246-807-00	100k		carbon
R6096	1-214-141-00	2.4k	¼W	1% metal oxide
R6097	1-214-172-00	47k	¼W	1% metal oxide
R6098	1-214-790-00	2.2M	½W	1% metal oxide
R6099	1-214-116-00	220	¼W	1% metal oxide
R6100	1-246-807-00	100k		carbon
R6101	1-246-795-00	10k		carbon
R6102	1-246-803-00	47k		carbon
R6103	1-212-718-00	470k	½W	1% metal oxide
R6104	1-214-116-00	220	¼W	1% metal oxide
R6105	1-246-807-00	100k		carbon
R6106	1-246-795-00	10k		carbon
R6107, 6108	1-246-807-00	100k		carbon
R6109	1-214-790-00	2.2M	½W	1% metal oxide
R6110, 6111	1-246-803-00	47k		carbon
R6112	1-246-807-00	100k		carbon
R6113	1-214-156-00	10k	¼W	1% metal oxide
R6114	1-214-150-00	5.6k	¼W	1% metal oxide
R6115	1-214-180-00	100k	¼W	1% metal oxide
R6116	1-214-790-00	2.2M	½W	1% metal oxide
R6117	1-214-108-00	100	¼W	1% metal oxide
R6118-6120	1-246-807-00	100k		carbon
R6121	1-246-864-00	51k		carbon
R6122	1-246-795-00	10k		carbon
R6123	1-246-848-00	2.4k		carbon
R6125	1-246-789-00	3.3k		carbon
R6126	1-246-785-00	1.5k		carbon
R6127	1-214-132-00	1k	¼W	1% metal oxide
R6128	1-214-146-00	3.9k	¼W	1% metal oxide
R6129	1-246-775-00	220		carbon
R6130	1-246-763-00	22		carbon
R6131	1-214-138-00	1.8k	¼W	1% metal oxide

Ref. No.	*Part No.*	*Description*		*Remark*
R6132	1-246-766-00	39		carbon
R6133	1-246-794-00	8.2k		carbon
R6134	1-246-795-00	10k		carbon
R6135	1-246-850-00	3.6k		carbon
R6136	1-246-792-00	5.6k		carbon
R6137	1-214-149-00	5.1k	¼W	1% metal oxide
R6138	1-214-141-00	2.4k	¼W	1% metal oxide
R6139–6142	1-214-180-00	100k	¼W	1% metal oxide
R6143	1-246-795-00	10k		carbon
R6144	1-214-149-00	5.1k	¼W	1% metal oxide
R6145	1-214-165-00	24k	¼W	1% metal oxide
R6146	1-246-807-00	100k		carbon
R6147	1-202-455-00	1M	¼W	composition
R6148	1-212-718-00	470k	½W	1% metal oxide
R6149	1-212-711-00	240k	½W	1% metal oxide
R150	1-202-473-00	5.6M	¼W	composition
R151	1-214-141-00	2.4k	¼W	1% metal oxide
RV6001	1-224-921-00	Variable,	20k	GAIN RED
RV6002	1-224-920-00	Variable,	10k	BIAS RED
RV6003	1-224-921-00	Variable,	20k	GAIN GREEN
RV6004	1-224-920-00	Variable,	10k	BIAS GREEN
RV6005	1-224-921-00	Variable,	20k	GAIN BLUE
RV6006	1-224-920-00	Variable,	10k	BIAS BLUE
RV6007	1-224-922-00	Variable,	50k	H AMP
RV6008	1-224-923-00	Variable,	100k	H AMP TILT
RV6009	1-224-922-00	Variable,	50k	Y BOW
RV6010	1-224-921-00	Variable,	20k	H STAT
RV6011	1-224-920-00	Variable,	10k	V STAT
RV6012	1-224-916-00	Variable,	500	U/S V SIZE
RV6013	1-224-917-00	Variable,	1k	N/S V SIZE
RV6014	1-224-939-00	Variable,	5k	EXP CENT
RV6015	1-224-922-00	Variable,	50k	V CENT
RV6016	1-224-921-00	Variable,	20k	BALANCE
RV6017	1-224-916-00	Variable,	500	EXPAND AMP
RV6018	1-224-920-00	Variable,	10k	U/S AMP
RV6019	1-224-920-00	Variable,	10k	NORMAL AMP
RV6020	1-224-921-00	Variable,	20k	TILT
RV6021	1-224-918-00	Variable,	2k	EXPAND AMP
RV6022	1-224-920-00	Variable,	10k	U/S AMP
RV6023	1-224-920-00	Variable,	10k	NORMAL AMP
RV6024	1-224-941-00	Variable,	20k	H OSC
RV6025	1-224-941-00	Variable,	20k	H PHASE
RV6026	1-224-942-00	Variable,	50k	H 5μsec
RV6027	1-224-941-00	Variable,	20k	EXP. H. SIZE
RV6028	1-224-978-00	adjustable,	50	AFC SLOW FAST POSITION

Ref. No.	Part No.	Description	Remark

MISCELLANEOUS

S6001	1-552-898-00	Togle, RED CUT-OFF	
S6002	1-552-898-00	Togle, GREEN CUT-OFF	
S6003	1-552-898-00	Togle, BLUE CUT-OFF	
S6004	1-552-898-00	Togle,CROSS HATCH	
S6005	1-552-898-00	Togle, SET UP	

8. DB BOARD

♦ 1-601-462-00 DB board E-209

CAPACITORS

C1, 2	1-123-319-00	47	16V elect	

DIODES

D1, 2	8-719-815-55	1S1555	

IC

IC1	8-759-145-58	μPC4558C	

RESISTORS

R1	1-214-149-00	5.1k	¼W	1% metal oxide
R2, 3	1-214-156-00	10k	¼W	1% metal oxide
R4	1-214-149-00	5.1k	¼W	1% metal oxide
R5	1-214-160-00	15k	¼W	1% metal oxide
R6	1-214-156-00	10k	¼W	1% metal oxide
R7	1-214-168-00	33k	¼W	1% metal oxide
R8	1-214-156-00	10k	¼W	1% metal oxide
R9	1-214-132-00	1k	¼W	1% metal oxide
R10	1-212-718-00	470k	½W	1% metal oxide
RV1–3	1-224-931-00	Variable, 20k metal oxide; V.TILT		
RV4	1-224-931-00	Variable, 20k metal oxide; Y.TILT		

9. E BOARD

♦ A-1345-241-A E Board, complete E-101

CAPACITORS

C8001	1-108-630-00	0.022	100V	10%	mylar
C8002	1-108-622-00	0.0047	100V	10%	mylar
C8003	1-123-316-00	10	16V	elect	
C8004	1-123-352-00	1	50V	elect	
C8005	1-108-632-00	0.033	100V	10%	mylar
C8006	1-102-030-00	330p	500V	10%	
C8007	1-121-999-00	10	160V	elect	
C8008	1-108-703-00	0.082	200V	10%	mylar
C8009	1-102-973-00	100p	5%		
C8010	1-123-356-00	10	50V	elect	
C8011	1-123-349-00	1000	35V	elect	
C8012	1-108-702-00	0.068	200V	10%	mylar
C8013	1-123-172-00	2.2	160V	elect	
C8014	1-123-349-00	1000	35V	elect	
C8015	1-108-700-00	0.047	200V	10%	mylar
C8016	1-108-692-00	0.01	200V	10%	mylar
C8017	1-108-702-00	0.068	200V	10%	mylar
C8018	1-102-244-00	220P	500V	10%	
C8019	1-130-065-00	5600P	1.5kV	film	
C8020	1-123-093-00	22	160V		
C8021, 8022	1-123-320-00	100	16V	elect	
C8023	1-102-228-00	470P	500V	10%	
C8024, 8025	1-130-179-00	2	200V	polypropylene	
C8026	1-108-626-00	0.01	100V	10%	mylar
C8027	1-103-733-00	0.0022	50V	polystyrene	
C8028, 8029	1-123-319-00	47	16V	elect	
C8030	1-130-203-11	0.01	50V	5% polypropylene	
C8031	1-102-244-51	220P	500V	10%	
C8033	1-123-352-51	1	50V	elect	
C8034	1-102-978-00	220p	5%		
C8035	1-123-026-00	2.2	160V	elect	
C8036	1-108-632-00	0.033	100V	10%	mylar
C8037, 8038	1-129-948-00	0.02	1kV	film	
C8039	1-102-824-00	470p	5%		
C8040	1-129-948-00	0.02	1kV	5%	
C8041, 8042	1-108-638-00	0.1	100V	10%	mylar
C8043	1-130-330-00	1.4	200V	polypropylene	
C8044	1-102-978-00	220p			

DIODES

D8001–8006	8-719-815-55	1S1555	
⇒ D8007	8-719-320-31	HF1C	
⇒ D8008, 8009	8-719-200-02	10E2	
⇒ D8010, 8011	8-719-320-31	HF1C	
⇒ D8012	8-719-305-15	GH3F	
D8013	8-719-305-15	GH3F	
⇒ D8014	8-719-305-15	GH3F	
D8015	8-719-815-55	1S1555	
D8017–8021	8-719-815-55	1S1555	
⇒ D8022	8-719-931-15	EQB01-15	

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	*Part No.*	*Description*	*Remark*
⇒ D8023,8024	8-719-320-31	HF1C	
D8025	8-719-320-31	HF1C	
D8026–8033	8-719-815-55	1S1555	
D8034	8-719-901-19	V11N	
D8035	8-719-815-55	1S1555	

ICs

Ref. No.	*Part No.*	*Description*	*Remark*
IC8001, 8002	8-759-145-58	μPC4558C	
IC8003	8-759-729-03	NJM2903-D	

COILS

Ref. No.	*Part No.*	*Description*	*Remark*
L8001	1-408-242-21	10mH 5%	
L8002	1-435-055-21	Phase Adjust	PAC
L8003	1-407-841-12	15mH	
L8005	1-459-104-11	10mH	HCC
L8006	1-421-368-11		HLC
L8007	1-421-364-11	choke	PCC
L8008	1-408-236-21	2.7mH 5%	
L8009	1-408-240-21	6.8mH 10%	

TRANSISTORS

Ref. No.	*Part No.*	*Description*	*Remark*
⇒ Q8001	8-729-612-77	2SA1027R	
Q8002	8-729-663-47	2SC1364	
⇒ Q8003	8-729-347-82	2SD478	
Q8004		2SK23A-840	
⇒ Q8005	8-723-384-01	2SA1027R	
Q8006	8-765-020-00	2SA884	
Q8007	8-765-012-20	2SC1811	
⇒ Q8008	8-729-309-36	2SA893A-EV	
⇒ Q8009	8-729-356-82	2SB568	
⇒ Q8010	8-729-309-06	2SC1890A-EV	
⇒ Q8011	8-729-347-82	2SD478	
Q8012	8-765-012-20	2SC1811	
Q8013	8-729-347-82	2SD478	
Q8014	8-729-356-82	2SB568	
⇒ Q8015	8-726-420-00	SG264A	
⇒ Q8016	8-729-347-82	2SD478	
Q8017, 8018	8-729-309-06	2SC1890A-EV	
Q8019	8-729-663-47	2SC1364	
Q8020	8-765-222-20	2SC1963	
Q8021	8-765-020-00	2SA884	
Q8022	8-729-663-47	2SC1364	
⇒ Q8023	8-729-612-77	2SA1027R	
Q8026	8-729-663-47	2SC1364	
⇒ Q8029	8-729-366-81	2SD668	
⇒ Q8030–8032	8-729-372-30	2SC1723	

RESISTORS

Ref. No.	*Part No.*	*Description*		*Remark*
R8001	1-246-492-25	6.2k	¼W	carbon
R8002	1-246-501-25	15k	¼W	carbon
R8003	1-246-497-25	10k	¼W	carbon
R8004, 8005	1-246-473-25	1k	¼W	carbon
R8006, 8007	1-246-489-25	4.7k	¼W	carbon
R8008	1-246-513-25	47k	¼W	carbon
R8009	1-246-521-25	100k	¼W	carbon
R8010	1-246-503-25	18k	¼W	carbon
R8011	1-246-529-25	220k	¼W	carbon
R8012	1-246-449-25	100	¼W	carbon
R8013	1-247-005-00	100	¼W	carbon (nonflammable)
R8014	1-213-147-00	2.2k	1W	metal oxide (nonflammable)
R8015	1-214-168-00	33k	¼W	1% metal oxide
R8016	1-214-172-00	47k	¼W	1% metal oxide
R8017	1-246-520-25	91k	¼W	carbon
R8018	1-246-521-25	100k	¼W	carbon
R8019	1-246-504-25	20k	¼W	carbon
R8020	1-246-494-25	7.5k	¼W	carbon
R8021	1-246-473-25	1k	¼W	carbon
R8022	1-213-137-00	330	1W	metal oxide (nonflammable)
R8023	1-246-481-25	2.2k	¼W	carbon
R8024	1-246-491-25	5.6k	¼W	carbon
R8025	1-213-143-00	1k	1W	metal oxide (nonflammable)
R8026	1-246-441-25	47	¼W	carbon
R8027	1-246-453-25	150	¼W	carbon
R8028, 8029	1-212-361-00	1.2	1W	metal oxide (nonflammable)
R8030	1-213-140-00	560	1W	metal oxide (nonflammable)
R8031	1-212-366-00	3.3	1W	metal oxide (nonflammable)
R8032	1-246-473-25	1k	¼W	carbon
R8033	1-246-481-25	2.2k	¼W	carbon
R8034	1-246-489-25	4.7	¼W	carbon
R8035	1-212-356-00	0.47	1W	metal oxide (nonflammable)
R8036	1-213-129-00	68	1W	metal oxide (nonflammable)
R8037	1-246-997-00	1.2	¼W	carbon (nonflammable)
R8038	1-206-672-00	2.2k	2W	metal oxide (nonflammable)
R8039	1-247-012-00	1.8k	¼W	carbon (nonflammable)
R8040	1-247-027-00	6.8	1/8W	carbon (nonflammable)
R8041	1-246-476-25	1.3k	¼W	carbon
R8042	1-213-162-00	39k	1W	metal oxide (nonflammable)
R8043	1-246-521-25	100k	¼W	carbon

Ref. No.	Part No.	Description		Remark
R8044	1-246-489-25	4.7k	¼W	carbon
R8045	1-246-513-25	47k	¼W	carbon
R8046	1-214-154-00	8.2k	¼W	1% metal oxide
R8047	1-246-514-25	51k	¼W	carbon
R8048	1-214-146-00	3.9k	¼W	1% metal oxide
R8049	1-246-483-25	2.7k	¼W	carbon
R8050	1-246-487-25	3.9k	¼W	carbon
R8051	1-246-483-25	2.7k	¼W	carbon
R8052	1-214-154-00	8.2k	¼W	1% metal oxide
R8053	1-246-491-25	5.6k	¼W	carbon
R8054	1-246-473-25	1k	¼W	carbon
R8055	1-246-491-25	5.6k	¼W	carbon
R8056	1-214-146-00	3.9k	¼W	1% metal oxide
R8057	1-246-487-25	3.9k	¼W	carbon
R8058	1-246-489-25	4.7k	¼W	carbon
R8059	1-213-124-00	27	1W	metal oxide (nonflammable)
R8060	1-213-127-00	47	1W	metal oxide (nonflammable)
R8061	1-214-156-00	10k	¼W	1% metal oxide
R8062	1-214-172-00	47k	¼W	1% metal oxide
R8064	1-214-158-00	1.2k	¼W	1% metal oxide
R8065	1-214-152-00	6.8k	¼W	1% metal oxide
R8066	1-246-482-25	2.4k	¼W	carbon
R8067	1-246-473-25	1k	¼W	carbon
R8069	1-246-490-25	5.1k	¼W	carbon
R8071	1-246-505-25	22k	¼W	carbon
R8072	1-246-497-25	10k	¼W	carbon
R8073	1-246-473-25	1k	¼W	carbon
R8074	1-206-676-00	3.3k	2W	metal oxide (nonflammable)
R8075	1-202-629-15	220k	½W	composition
R8076	1-246-997-00	1.2	¼W	carbon (nonflammable)
R8077	1-202-641-15	680k	½W	composition
R8078	1-202-651-15	1.8M	½W	composition
R8079	1-202-633-15	330k	½W	composition
R8080	1-246-499-25	12k	¼W	carbon
R8081	1-202-455-11	1M	¼W	composition
R8082	1-214-157-00	11k	¼W	1% metal oxide
R8083–8085	1-214-180-00	100k	¼W	1% metal oxide
R8086	1-214-177-00	75k	¼W	1% metal oxide
R8087	1-214-162-00	18k	¼W	1% metal oxide
R8089	1-202-455-11	1M	¼W	5% composition
R8090	1-214-145-00	3.6k	¼W	1% metal oxide
R8091	1-214-108-00	100	¼W	1% metal oxide
R8092	1-214-158-00	12k	¼W	1% metal oxide

Ref. No.	Part No.	Description		Remark
R8093	1-246-497-25	10k	¼W	carbon
R8094	1-214-167-00	30k	¼W	1% metal oxide
R8095	1-246-497-25	10k	¼W	carbon
R8096	1-206-676-00	3.3k	2W	metal oxide (nonflammable)
R8097	1-247-033-00	100	1/8W	carbon (nonflammable)
R8098	1-206-664-00	1k	2W	metal oxide (nonflammable)
R8099	1-246-449-25	100	¼W	carbon
R8100	1-246-527-25	180k	¼W	carbon
R8101–8103	1-246-497-25	10k	¼W	carbon
R8104	1-202-455-11	1M	¼W	5% composition
R8105	1-246-487-25	3.9k	¼W	carbon
R8106	1-214-154-00	8.2k	¼W	1% metal oxide
R8107	1-246-457-25	220	¼W	carbon
R8108, 8109	1-246-449-00	100	¼W	carbon
R8110	1-206-459-00	6.8	2W	metal oxide nonflammable)
RV8001	1-224-921-00	variable,	20k	V. PIN BIANCE
RV8002	1-224-921-00	variable,	20k	V. PIN GAIN
RV8003	1-224-920-00	variable,	10k	V. SIZE
RV8004	1-224-918-00	variable,	2k	H. CENTER
RV8005	1-224-919-00	variable,	5k	U. SH SIZE
RV8006	1-224-919-00	variable,	5k	H. SIZE
RV8007	1-224-922-00	variable,	50	H.BLANK WIDTH
RV8008	1-226-114-00	variable,	2.2M	FOCUS (HIGH VOLT)
RV8009	1-224-922-00	variable,	50k	SCREEN

TRANSFORMERS

T8001	1-421-365-00		POT
T8002	1-437-071-00	Horizontal Drive,	HDT
T8003	1-437-241-00	Horizontal Output,	HOT
T8004	1-407-849-21	Dynamic Focus,	DFT

THERMISTOR

TH1	1-800-202-XX	S-10k

10. F BOARD

Ref. No.	Part No.	Description	Remark
	♠ 1-600-352-00	F Board	E-304

CAPACITORS

Ref. No.	Part No.	Description	Remark
C501	⚠ 1-130-060-00	0.1 125V	plypropylene
C502	⚠ 1-108-421-00	0.01 200V	10% myler
C503	⚠ 1-161-743-00	4700p 400V	
C504	⚠ 1-161-743-00	4700p 400V	
C505	⚠ 1-161-743-00	4700p 400V	
C506	⚠ 1-161-743-00	4700p 400V	
C507	⚠ 1-161-743-00	4700p 400V	

COIL

Ref. No.	Part No.	Description	Remark
L501	⚠ 1-441-855-00	Transformer, LFT	
L502	⚠ 1-459-215-00	120μH	CORE
L503	⚠ 1-459-215-00	120μH	CORE
THP501	1-800-686-00	Thermistor, positive	

- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

11. G BOARD

Ref. No.	Part No.	Description	Remark
	♠ A-1316-006-A	G Board, complete	E-102

CAPACITORS

Ref. No.	Part No.	Description		Remark
C601	1-161-500-00	0.0047×2	125V	AC
C602	1-123-253-00	22	160V	elect
C603	1-161-500-00	0.0047×2	125V	AC
C604, 605	1-123-348-00	470	35V	elect
C606	1-101-004-00	0.01		
C607, 608	1-125-197-00	820	160V	elect
C609	1-123-329-00	10	25V	elect
C610	1-101-004-00	0.01		
C611, 612	1-161-500-00	0.0047×2	125V	AC
C613	1-125-198-00	0.0047	50V	elect
C614	1-123-336-00	470	25V	elect
C617	1-161-500-00	0.0047×2	125V	AC
C618	1-123-336-00	470	25V	elect
C619	1-161-500-00	0.0047×2	125V	AC
C620	1-123-336-00	470	25V	elect
C621	1-125-198-00	0.0047	50V	elect
C622	1-102-973-00	100p		5%
C623–626	1-101-003-00	0.0047		
C627	1-125-193-00	4700	35V	elect
C628	1-102-973-00	100p		5%
C629	1-102-976-00	180p		5%
C630	1-102-973-00	100p		5%
C631–634	1-101-003-00	0.0047		
C635	1-125-193-00	4700	35V	elect
C636	1-102-973-00	100p		5%
C637	1-102-976-00	180p		5%
C638–641	1-101-003-00	0.0047		
C642	1-125-193-00	4700	35V	elect
C643	1-123-328-00	4.7	25V	elect
C644	1-121-257-00	4.7	16V	elect
C646	1-123-329-00	10	25V	elect
C647	1-101-004-00	0.01		
C648	1-123-307-00	100	10V	elect
C649	1-123-316-00	10	16V	elect
C650, 651	1-123-330-00	22	25V	elect
C652	1-123-320-00	100	16V	elect
C653	1-108-704-00	0.1	200V	mylar
C654	1-123-351-00	0.47	50V	elect

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark

DIODES

Ref. No.	Part No.	Description
⇒ D601–604	8-719-911-55	U05G
⇒ D605	8-759-157-40	μPC574J
D606	8-719-301-01	SEL101S
⇒ D607	8-759-157-40	μPC574J
D608, D610–612	⚠ 8-759-157-41	μPC574J-G
D613	⚠ 8-719-175-24	RD7.5E-BIZ
⇒ D614	8-719-500-34	S3VC40
⇒ D615	8-719-501-34	S3VC40R
⇒ D618	8-719-200-02	10E2
D619	8-719-815-55	1S1555
⇒ D620	8-719-500-34	S3VC40
⇒ D621	8-719-501-34	S3VC40R
D625	8-719-815-55	1S1555
⇒ D626–629	8-719-911-55	U05G
⇒ D630	8-719-200-02	10E2
D631	8-719-815-55	1S1555
⇒ D632–635	8-719-911-55	U05G
⇒ D636	8-719-200-02	10E2
D637	8-719-815-55	1S1555
⇒ D638	8-719-500-34	S3VC40
⇒ D639	8-719-501-34	S3VC40R
⇒ D640	8-719-931-08	EQB01-08
⇒ D642	8-719-931-08	EQB01-08
D643	8-719-815-55	1S1555

FUSES

Ref. No.	Part No.	Description	Remark
F601	⚠ 1-532-536-00	125V	1A (speedy)
F602	⚠ 1-532-555-00	125V	1.6A (normal)

ICs

Ref. No.	Part No.	Description
IC601–605	8-759-377-23	HA17723G

Ref. No.	Part No.	Description	Remark

TRANSISTORS

Ref. No.	Part No.	Description
⇒ Q601	8-719-000-38	Thyristor, CR3AM
Q602	8-725-412-00	2SC1124
⇒ Q603–605	8-762-020-00	2SA835
Q606	⚠ 8-719-000-38	Thyristor, CR3AM
Q607, 608	8-729-307-62	2SD476A
⇒ Q609	8-762-020-00	2SA835
Q610	8-729-307-62	2SD476A
⇒ Q611	8-762-020-00	2SA835
Q612	8-729-663-47	2SC1364
Q613	8-729-307-62	2SD476A
⇒ Q614	8-719-000-38	Thyristor, CR3AM

RESISTORS

Ref. No.	Part No.			Description
R602	1-214-148-00	4.7k	¼W	1% metal oxide
R603, 604	1-214-168-00	33k	¼W	1% metal oxide
R605	1-214-162-00	18k	¼W	1% metal oxide
R606	1-202-621-15	100k	½W	composition
R607	1-213-163-00	47k	1W	metal oxide (nonflammable)
R608	1-214-136-00	1.5k	¼W	1% metal oxide
R609	1-214-170-00	39k	¼W	1% metal oxide
R610	1-214-142-00	2.7k	¼W	1% metal oxide
R611	1-214-132-00	1k	¼W	1% metal oxide
R612	1-214-151-00	6.2k	¼W	1% metal oxide
R613	1-214-166-00	27k	¼W	1% metal oxide
R614	⚠ 1-214-166-00	27k	¼W	1% metal oxide
R615	⚠ 1-214-168-00	33k	¼W	1% metal oxide
R616	1-217-292-00	3.3	5W	wire wound (nonflammable)
R617	⚠ 1-214-153-00	7.5k	¼W	1% metal oxide
R618	⚠ 1-214-142-00	2.7k	¼W	1% metal oxide
R619	1-214-149-00	5.1k	¼W	1% metal oxide
R620	1-214-140-00	2.2k	¼W	1% metal oxide
R621	1-214-153-00	7.5k	¼W	1% metal oxide
R622	1-214-143-00	3k	¼W	1% metal oxide
R623	1-214-160-00	15k	¼W	1% metal oxide
R624	1-214-120-00	330	¼W	1% metal oxide
R625	1-212-356-00	0.47	1W	metal oxide (nonflammable)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description		Remark
R626	1-214-164-00	22k	¼W	1% metal oxide
R627	1-214-139-00	2k	¼W	1% metal oxide
R628	1-214-120-00	330	¼W	1% metal oxide
R629	1-214-160-00	15k	¼W	1% metal oxide
R730	1-214-166-00	27k	¼W	1% metal oxide
R631	1-214-140-00	2.2k	¼W	1% metal oxide
R632	1-214-157-00	11k	¼W	1% metal oxide
R633	1-212-356-00	0.47	1W	metal oxide (nonflammable)
R636, 637	1-214-132-00	1k	¼W	1% metal oxide
R638	1-214-136-00	1.5k	¼W	1% metal oxide
R639	1-214-160-00	15k	¼W	1% metal oxide
R640	1-214-154-00	8.2k	¼W	1% metal oxide
R641	1-214-125-00	510	¼W	1% metal oxide
R642	1-217-194-00	0.33	2W	wire wound (nonflammable)
R643	1-214-140-00	2.2k	¼W	1% metal oxide
R644	1-214-148-00	4.7k	¼W	1% metal oxide
R645	1-214-149-00	5.1k	¼W	1% metal oxide
R646	1-214-145-00	3.6k	¼W	1% metal oxide
R647	1-214-140-00	2.2k	¼W	1% metal oxide
R648	1-212-363-00	1.8	1W	metal oxide (nonflammbale)
R651, 652	1-214-132-00	1k	¼W	1% metal oxide
R653 ⚠	1-214-162-00	18k	¼W	1% metal oxide
R654 ⚠	1-214-143-00	3k	¼W	1% metal oxide
R655	1-214-160-00	15k	¼W	1% metal oxide
R656	1-214-125-00	510	¼W	1% metal oxide
R657	1-214-154-00	8.2k	¼W	1% metal oxide
R658, 659 ⚠	1-214-148-00	4.7k	¼W	1% metal oxide
R660	1-217-195-00	0.39	2W	wire wound (nonflammbale)
R661	1-214-111-00	130	¼W	1% metal oxide
R662	1-202-633-15	330k	½W	composition
R666	1-214-166-00	27k	¼W	1% metal oxide
R667 ⚠	1-214-142-00	2.7k	¼W	1% metal oxide
R668 ⚠	1-214-168-00	33k	¼W	1% metal oxide

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description		Remark
⊠R669 ⚠			¼W	metal oxide
R670 ⚠	1-214-162-00	18k	¼W	1% metal oxide
R671	1-214-111-00	130	¼W	1% metal oxide
R672	1-214-146-00	3.9k	¼W	1% metal oxide
R673 ⚠	1-214-153-00	7.5k	¼W	1% metal oxide
R674	1-213-161-00	33k	1W	metal oxide
RV601 ⚠	1-224-938-00	Variable, 2k		+90V ADJ
RV602	1-224-937-00	Variable, 1k		+24V ADJ
RV603	1-224-936-00	Variable, 500		+12V ADJ

MISCELLANEOUS

	1-533-087-00	Holder, fuse	

12. HA BOARD

	♦ 1-600-356-00	HA Board	E-156

CAPACITORS

C101–104	1-101-006-00	0.047

RESISTORS

R101	1-214-174-00	56k	¼W	1% metal oxide
R102	1-214-156-00	10k	¼W	1% metal oxide
R103	1-214-178-00	82k	¼W	1% metal oxide
R104, 105	1-214-180-00	100k	¼W	1% metal oxide
R106	1-214-172-00	47k	¼W	1% metal oxide
R107	1-214-180-00	100k	¼W	1% metal oxide
R108	1-214-172-00	47k	¼W	1% metal oxide
R109	1-214-180-00	100k	¼W	1% metal oxide
R110	1-214-173-00	51k	¼W	1% metal oxide
RV101/S101	1-226-545-00	Variable/w switch 10k; HUE		
RV102/S102	1-226-546-00	Variable/w switch 20k; CHROMA		
RV103/S103	1-226-546-00	Variable/w switch 20k; BRIGHTNESS		
RV104/S104	1-226-546-00	Variable/w switch 20k; CONTRAST		
RV105/S105	1-226-546-00	Variable/w switch 20k; APERTURE		

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref. No.	Part No.	Description	Remark

13. HB BOARD

	♦ 1-600-357-00	HB Board	E-155
		CAPACITORS	
C201–203	1-101-004-00	0.01	
		RESISTORS	
RV201	1-226-547-00	Variable, 10k carbon HUE PRESET	
RV202	1-224-796-00	Variable, 20k carbon CHROMA PRESET	
RV203	1-224-796-00	Variable, 20k carbon BRIGHTNESS PRESET	
RV204	1-224-796-00	Variable, 20k carbon CONTRAST PRESET	

14. JA BOARD

	♦ 1-600-358-00	JA Board	E-154
S1501, 1502	1-552-897-00	Lever, MODE, SYNC	
S1503	1-552-267-00	Lever-slide INPUT	

15. JB BOARD

	♦ 1-600-347-00	JB Board	E-210
S2501–2503	1-552-897-00	Lever, UNDER SCAN, DELAY-V, DELAY-H	

16. JC BOARD

	♦ 1-600-348-00	JC Board	E-208
S3501, 3502	1-552-897-00	Lever, BLUE ONLY, AFC FAST-SLOW	

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description	Remark

17. P BOARD

♦ A-1195-001-A P Board, complete E-204

CAPACITORS

C801	1-108-626-00	0.01	100V	10%	mylar
C802	1-129-794-00	0.0033	100V	10%	film
C803	1-102-228-00	470p	500V	10%	
C804	1-108-626-00	0.01	100V	10%	mylar
C805	1-102-244-00	220p	500V	10%	
C806	1-108-694-00	0.015	200V	10%	mylar
C807	1-123-093-00	22	160V		elect
C808	1-130-066-00	14000p	1.5kV	3%	film
C809	1-130-067-00	45000p	1.5kV	3%	film
C810	1-130-068-00	67000p	1kV	3%	film
C811	1-108-622-00	0.0047	100V	10%	mylar
C812	1-123-319-00	47	16V		elect
C813	1-102-244-00	220p	500V	10%	
C814	1-102-824-00	470p		5%	
C815	1-123-319-00	47	16V		elect
C816	1-108-638-00	0.1	100V	10%	mylar
C817–819	1-123-319-00	47	16V		elect
C820	1-123-352-00	1	50V		elect
C821	1-108-704-00	0.1	200V	10%	mylar
C822	1-102-824-00	470p		5%	
C823, 824	1-123-316-00	10	16V		elect

DIODES

	D801, 802	8-719-815-55	1S1555
⇒	D803	8-719-200-02	10E2
	D804	8-719-305-15	GH3F
	D805–810	8-719-815-55	1S1555
⇒	D811	8-719-931-06	EQB01-06
⇒	D812	8-719-200-02	10E2
⇒	D813	8-759-157-40	μPC574J
	D814	⚠ 8-719-992-12	EQA01-21R2

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

ICs

IC801–803	8-759-145-58	μPC4558C

COILS

L801	1-407-720-11	100μH, choke
L802	1-413-026-21	Series Regulation (SRC)
L803	1-407-365-12	0.74μH, RF choke
L804	1-407-364-21	3.3μH, spook choke

TRANSISTORS

	Q801, 802	8-729-663-47	2SC1364
	Q803	8-765-012-20	2SC1811
	Q804	8-729-663-47	2SC1364
⇒	Q805	8-719-000-38	Thyristor, CR3AM

RESISTORS

R801	1-246-515-25	56k	¼W	carbon
R802	1-246-475-25	1.2k	¼W	carbon
R803	1-246-475-25	1.2k	¼W	carbon
R804	1-246-481-25	2.2k	¼W	carbon
R805	1-246-473-25	1k	¼W	carbon
R806	1-246-489-25	4.7k	¼W	carbon
R807	1-206-680-00	4.7k	2W	metal oxide (nonflammable)
R808	1-212-364-00	2.2	1W	metal oxide (nonflammable)
R809	1-213-129-00	68	1W	metal oxide (nonflammable)
R810	1-246-497-25	10k	¼W	carbon
R811	1-246-499-25	12k	¼W	carbon
R812	1-246-487-25	3.9k	¼W	carbon
R813	1-246-481-25	2.2k	¼W	carbon
R814	1-246-537-25	470k	¼W	carbon
R815, 816	1-246-497-25	10k	¼W	carbon

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R817	1-246-481-25	2.2k	¼W	carbon	
R818	1-214-180-00	100k	¼W	1% metal oxide	
R819	1-213-155-00	10k	1W	metal oxide (nonflammable)	
R820	1-246-498-25	11k	¼W	carbon	
R821	1-246-473-25	1k	¼W	carbon	
R822	1-246-487-25	3.9k	¼W	carbon	
R823	1-214-168-00	33k	¼W	1% metal oxide	
R824	1-214-160-00	15k	¼W	1% metal oxide	
R825	1-246-497-25	10k	¼W	carbon	
R826	1-202-645-15	1M	½W	composition	
R827	1-246-487-25	3.9k	¼W	carbon	
R828	1-246-495-25	8.2k	¼W	carbon	
R829	1-246-487-25	3.9k	¼W	carbon	
R830	1-246-497-25	10k	¼W	carbon	
R831	1-246-487-25	3.9k	¼W	carbon	
R832	1-246-495-25	8.2k	¼W	carbon	
R833	1-246-487-25	3.9k	¼W	carbon	
R834	1-246-497-25	10k	¼W	carbon	
R835	1-202-645-15	1M	½W	composition	
R836	1-246-497-25	10k	¼W	carbon	
R837	1-246-508-25	30k	¼W	carbon	
R838, 839	1-246-491-25	5.6k	¼W	carbon	
■ R840 ⚠			¼W	metal oxide	
■ R841 ⚠			¼W	metal oxide	
R842	1-246-469-25	680	¼W	carbon	
RV801	1-224-921-00	variable, 20k		HV. ADJ	

MISCELLANEOUS

Ref. No.	Part No.	Description
T1801	1-437-071-00	Horizontal Drive, HDT
T1802	1-421-366-00	LOT

> **Note:** The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

> **Note:** Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

18. Q BOARD

♦ A-1275-024-A Q Board, complete — E-306

CAPACITORS

Ref. No.	Part No.	Description			Remark
C9001	1-108-630-00	0.022	100V	10% mylar	
C9002	1-121-801-00	47	16V	elect (nonpolarized)	
C9003	1-101-004-00	0.01			
C9004	1-102-508-00	10p		(0.5p)	
C9005	1-123-319-00	47	16V	elect	
C9006	1-101-006-00	0.047			
C9007	1-102-525-00	68p		(0.5%)	
C9008	1-123-316-00	10	16V	elect	
C9009	1-123-319-00	47	16V	elect	
C9010	1-108-630-00	0.022	100V	10% mylar	
C9011	1-121-801-00	47	16V	elect (nonpolarized)	
C9012	1-101-004-00	0.01			
C9013	1-102-508-00	10p		(0.5p)	
C9014	1-123-319-00	47	16V	elect	
C9015	1-101-006-00	0.047			
C9016	1-102-525-00	68p		0.5%	
C9017	1-123-316-00	10	16V	elect	
C9018	1-123-319-00	47	16V	elect	
C9019	1-108-630-00	0.022	100V	10% mylar	
C9020	1-121-801-00	47	16V	elect (nonpolarized)	
C9021	1-101-004-00	0.01			
C9022	1-102-513-00	18p		(0.5p)	
C9023	1-123-319-00	47	16V	elect	
C9024	1-101-006-00	0.047			
C9025	1-102-525-00	68p		0.5%	
C9026	1-123-316-00	10	16V	elect	
C9027	1-123-319-00	47	16V	elect	
C9028	1-108-630-00	0.022	100V	10% mylar	
C9029	1-121-801-00	47	16V	elect (nonpolarized)	
C9030	1-101-004-00	0.01			
C9031	1-102-508-00	10p		(0.5p)	
C9032	1-123-319-00	47	16V	elect	
C9033	1-101-006-00	0.047			
C9034	1-102-525-00	68p		0.5%	
C9035	1-101-006-00	0.047			

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Ref. No.	Part No.	Description		Remark
C9036	1-123-319-00	47	16V	elect
C9037	1-108-626-00	0.01	100V	10% mylar
C9038	1-108-638-00	0.1	100V	10% mylar
C9039	1-108-630-00	0.022	100V	10% mylar
C9040	1-121-801-00	47	16V	elect (nonpolarized)
C9041	1-101-004-00	0.01		
C9042	1-102-508-00	10p		(0.5p)
C9043	1-123-319-00	47	16V	elect
C9044	1-101-006-00	0.047		
C9045	1-102-525-00	68p		0.5%
C9046	1-101-006-61	0.047	16V	elect
C9047	1-123-319-00	47	16V	elect
C9048	1-108-626-00	0.01	100V	10% mylar
C9049	1-108-638-00	0.1	100V	10% mylar
C9050	1-108-630-00	0.022	100V	10% mylar
C9051	1-121-801-00	47	16V	elect (nonpolarized)
C9052	1-101-004-00	0.01		
C9053	1-102-508-00	10p		(0.5p)
C9054	1-123-319-00	47	16V	elect
C9055	1-101-006-00	0.047		
C9056	1-102-525-00	68p		0.5%
C9057	1-101-006-61	0.047	16V	elect
C9058	1-123-319-00	47	16V	elect
C9059	1-108-626-00	0.01	100V	10% mylar
C9060	1-108-638-00	0.1	100V	10% mylar
C9061	1-101-004-00	0.01		
C9062	1-123-320-00	100	16V	elect
C9063	1-101-006-00	0.047		
C9064	1-101-004-00	0.01		
C9065	1-123-320-00	100	16V	elect

Ref. No.	Part No.	Description		Remark
C9066	1-101-004-00	0.01		
C9067	1-123-320-00	100	16V	elect
C9068	1-101-006-00	0.047		
C9069	1-123-320-00	100	16V	elect
C9070	1-101-004-00	0.01		
C9071	1-123-320-00	100	16V	elect
C9072	1-101-004-00	0.01		
C9073	1-123-320-00	100	16V	elect
C9074	1-101-004-00	0.01		
C9075	1-101-006-00	0.047		
C9076	1-101-004-00	0.01		
C9077	1-123-320-00	100	16V	elect
C9078	1-101-004-00	0.01		
C9079	1-123-320-00	100	16V	elect
C9080	1-101-004-00	0.01		
C9081	1-123-320-00	100	16V	elect
C9082	1-101-006-00	0.047		
C9083	1-123-319-00	47	16V	elect
C9084, 9085	1-102-888-00	150p		5%
C9086	1-101-006-00	0.047		
C9087–9090	1-123-319-00	47	16V	elect
C9091	1-123-320-00	100	16V	elect
C9092	1-101-004-00	0.01		
C9095	1-102-531-61	150p		0.5%
CV9001	1-141-147-XX	15p	VIDEO A RETERN LOSS COMP	
CV9002	1-141-138-XX	8p	VIDEO A INPUT COMP	
CV9003	1-141-147-XX	15p	VIDEO B RETERN LOSS COMP	
CV9004	1-141-138-XX	8p	VIDEO B INPUT COMP	
CV9005	1-141-147-XX	15p	EXT SYNC RETERN LOSS COMP	
CV9006	1-141-147-XX	15p	R RETERN LOSS COMP	
CV9007	1-141-138-XX	8p	R INPUT COMP	
CV9008	1-141-147-XX	15p	G RETERN LOSS COMP	
CV9009	1-141-138-XX	8p	G INPUT COMP	
CV9010	1-141-147-XX	15p	B RETERN LOSS COMP	
CV9011	1-141-138-XX	8p	B INPUT COMP	

Ref. No.	Part No.	Description	Remark
ICs			
IC9001–9003	8-759-145-58	μPC4558C	
IC9004–9007	8-751-300-00	CX130	
IC9008	8-759-901-23	SN74LS123N	
TRANSISTORS			
Q9001, 9002	8-724-375-01	2SC403C	
⇒ Q9003–9005	8-729-612-77	2SA1027R	
Q9006–9008	8-724-373-00	2SC403C	
⇒ Q9009–9011	8-729-612-77	2SA1027R	
Q9012–9014	8-724-375-01	2SC403C	
⇒ Q9015–9017	8-729-612-77	2SA1027R	
Q9019,9020	8-724-375-01	2SC403C	
⇒ Q9021–9023	8-729-612-27	2SA1027R	
⇒ Q9026	8-723-301-01	2SK43-11	
Q9027, 9028	8-724-375-01	2SC403C	
⇒ Q9029–9031	8-729-612-77	2SA1027R	
⇒ Q9034	8-723-301-01	2SK43-11	
Q9035, 9036	8-724-375-01	2SC403C	
⇒ Q9037–9039	8-729-612-77	2SA1027R	
⇒ Q9042	8-723-301-01	2SK43-11	
RESISTORS			
R9001	1-246-783-00	1k	carbon
R9002	1-246-775-00	220	carbon
R9003	1-214-160-00	15k ¼W	1% metal oxide
R9004	1-246-837-00	300	carbon
R9005	1-214-148-00	4.7k ¼W	1% metal oxide
R9006	1-246-792-00	5.6k	carbon
R9007	1-246-783-00	1k	carbon
R9008	1-246-852-00	5.1k	carbon
R9010	1-246-835-00	200	carbon
R9011	1-246-791-00	4.7k	carbon
R9012	1-246-771-00	100	carbon
R9013	1-246-854-00	7.5k	carbon
R9014	1-246-797-00	15k	carbon
R9015	1-214-140-00	2.2k ¼W	1% metal oxide

Ref. No.	Part No.	Description	Remark
R9016	1-214-132-00	1k ¼W	1% metal oxide
R9017	1-246-783-00	1k	carbon
R9018	1-246-775-00	220	carbon
R9019	1-214-160-00	15k ¼W	1% metal oxide
R9020	1-246-837-00	300	carbon
R9021	1-214-148-00	4.7k ¼W	1% metal oxide
R9022	1-246-792-00	5.6k	carbon
R9023	1-246-783-00	1k	carbon
R9024	1-246-852-00	5.1k	carbon
R9025	1-246-835-00	200	carbon
R9027	1-246-791-00	4.7k	carbon
R9028	1-246-771-00	100	carbon
R9029	1-246-854-00	7.5k	carbon
R9030	1-246-797-00	15k	carbon
R9031	1-214-139-00	2k ¼W	1% metal oxide
R9032	1-214-100-00	47 ¼W	1% metal oxde
R9033	1-214-130-00	820 ¼W	1% metal oxide
R9034	1-246-783-00	1k	carbon
R9035	1-246-775-00	220	carbon
R9036	1-214-180-00	100k ¼W	1% metal xode
R9037	1-246-837-00	300	carbon
R9038	1-214-148-00	4.7k ¼W	1% metal oxide
R9039	1-246-792-00	5.6k	carbon
R9040	1-246-783-00	1k	carbon
R9041	1-246-852-00	5.1k	carbon
R9042	1-246-835-00	200	carbon
R9044	1-246-791-00	4.7k	carbon
R9045	1-246-771-00	100	carbon
R9046	1-246-854-00	7.5k	carbon
R9047	1-246-797-00	15k	carbon
R9048	1-214-140-00	2.2k ¼W	1% metal oxide
R9049	1-214-132-00	1k ¼W	1% metal oxide
R9050	1-246-783-00	1k	carbon
R9051	1-246-775-00	220	carbon
R9052	1-214-160-00	15k ¼W	1% metal oxide
R9053	1-246-837-00	300	carbon
R9054	1-214-148-00	4.7k ¼W	1% metal oxide
R9055	1-246-792-00	5.6k	carbon
R9056	1-246-783-00	1k	carbon
R9057	1-246-852-00	5.1k	carbon
R9058	1-246-835-00	200	carbon

Ref. No.	Part No.			Description	Remark
R9060	1-246-791-00	4.7k		carbon	
R9061	1-246-771-00	100		carbon	
R9062	1-246-854-00	7.5k		carbon	
R9063	1-246-797-00	15k		carbon	
R9064	1-214-139-00	2k	¼W	1% metal oxide	
R9065	1-214-100-00	47	¼W	1% metal oxide	
R9066	1-214-130-00	820	¼W	1% metal oxide	
R9067	1-214-134-00	1.2k	¼W	1% metal oxide	
R9068	1-202-473-11	5.6M	¼W	5% composition	
R9069	1-246-795-00	10k		carbon	
R9070, 9071	1-246-783-00	1k		carbon	
R9072, 9073	1-246-784-00	1.2k		carbon	
R9074	1-246-841-00	620		carbon	
R9075	1-246-783-00	1k		carbon	
R9076	1-246-775-00	220		carbon	
R9077	1-214-160-00	15k	¼W	1% metal oxide	
R9078	1-246-837-00	300		carbon	
R9079	1-214-148-00	4.7k	¼W	1% metal oxide	
R9080	1-246-792-00	5.6k		carbon	
R9081	1-246-783-00	1k		carbon	
R9082	1-246-852-00	5.1k		carbon	
R9083	1-246-835-00	200		carbon	
R9085	1-246-791-00	4.7k		carbon	
R9086	1-246-771-00	100		carbon	
R9087	1-246-854-00	7.5k		carbon	
R9088	1-246-797-00	15k		carbon	
R9089	1-214-139-00	2k	¼W	1% metal oxide	
R9090	1-214-100-00	47	¼W	1% metal oxide	
R9091	1-214-130-00	820	¼W	1% metal oxide	
R9092	1-214-134-00	1.2k	¼W	1% metal oxide	
R9093	1-202-473-11	5.6M	¼W	5% composition	
R9094	1-246-795-00	10k		carbon	
R9095, 9096	1-246-783-00	1k		carbon	
R9097, 9098	1-246-784-00	1.2k		carbon	
R9099	1-246-841-00	620		carbon	
R9100	1-246-783-00	1k		carbon	
R9101	1-246-775-00	220		carbon	
R9102	1-214-160-00	15k	¼W	1% metal oxide	
R9103	1-246-837-00	300		carbon	
R9104	1-214-148-00	4.7k	¼W	1% metal oxide	

Ref. No.	Part No.			Description	Remark
R9105	1-246-792-00	5.6k		carbon	
R9106	1-246-783-00	1k		carbon	
R9107	1-246-852-00	5.1k		carbon	
R9108	1-246-835-00	200		carbon	
R9110	1-246-791-00	4.7k		carbon	
R9111	1-246-771-00	100		carbon	
R9112	1-246-854-00	7.5k		carbon	
R9113	1-246-797-00	15k		carbon	
R9114	1-214-139-00	2k	¼W	1% metal oxide	
R9115	1-214-100-00	47	¼W	1% metal oxide	
R9116	1-214-130-00	820	¼W	1% metal oxide	
R9117	1-214-134-00	1.2k	¼W	1% metal oxide	
R9118	1-202-473-11	5.6M	¼W	5% composition	
R9119	1-246-795-00	10k		carbon	
R9120, 9121	1-246-783-00	1k		carbon	
R9122, 9123	1-246-784-00	1.2k		carbon	
R9124	1-246-841-00	620		carbon	
R9125	1-246-771-00	100		carbon	
R9126	1-246-783-00	1k		carbon	
R9128, 9129	1-246-771-00	100		carbon	
R9131–9133	1-246-771-00	100		carbon	
R9134	1-246-783-00	1k		carbon	
R9136, 9137	1-246-771-00	100		carbon	
R9139	1-246-783-00	1k		carbon	
R9140	1-246-771-00	100		carbon	
R9141	1-214-150-00	5.6k	¼W	1% metal oxide	
R9142	1-246-771-00	100		carbon	
R9143	1-246-788-00	2.7k		carbon	
R9144	1-246-783-00	1k		carbon	
R9145–9147	1-246-763-00	22		carbon	
R9148	1-246-768-00	56		carbon	
R9149–9154	1-246-783-00	1k		carbon	
RV9001	1-224-935-00	Variable,	200		VIDEO B LEVEL
RV9002	1-224-935-00	Variable,	200		R LEVEL
RV9003	1-224-935-00	Variable,	200		G LEVEL
RV9004	1-224-935-00	Variable	200		B LEVEL
RV9005	1-224-942-00	Variable	50k		RGB CLAMP PULSE WIDTH

19. T BOARD

Ref. No.	Part No.	Description			Remark
	♠ A-1389-247-A	T Board, complete			E-256

CAPACITORS

Ref. No.	Part No.	Description			Remark
C6511	1-108-638-00	0.1	100V	10%	mylar
C6512	1-101-004-00	0.01			
C6513	1-108-638-00	0.1	100V	1%	mylar
C6514	1-101-004-00	0.01			

IC

Ref. No.	Part No.	Description
IC6501	8-759-901-57	SN74LS157N

TRANSISTOR

Ref. No.	Part No.	Description
Q6501	8-724-375-01	2SC403C
⇒ Q6502	8-723-301-01	2SK43-11
Q6503	8-723-306-01	2SK43-06
⇒ Q6504	8-723-301-01	2SK43-11
Q6505	8-723-306-01	2SK43-06

RESISTORS

Ref. No.	Part No.	Description		Remark
R6501–6508	1-246-795-00	10k		carbon
R6509	1-246-852-00	5.1k		carbon
R6510	1-214-134-00	1.2k	¼W	1% metal oxide
R6511–6519	1-246-771-00	100		carbon
R6520	1-246-771-00	100		carbon
R6521	1-246-771-00	100		carbon
R6522	1-214-155-00	9.1k	¼W	1% metal oxide
R6523	1-246-795-00	10k		carbon
R6524	1-202-473-00	5.6M	¼W	conposition
R6525	1-246-771-00	100		carbon
R6526	1-246-771-00	100		carbon
R6527	1-214-155-00	9.1k	¼W	1% metal oxide
R6528	1-246-795-00	10k		carbon
R6529	1-202-473-00	5.6M	¼W	composition
R6530	1-246-798-00	18k		carbon

• Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

20. U BOARD

Ref. No.	Part No.	Description			Remark
	♠ A-1389-246-A	U Board, complete			E-307

CAPACITORS

Ref. No.	Part No.	Description		Remark
C401, 402	1-102-848-00	180p		5%
C403	1-123-352-00	1	50V	elect
C404	1-123-319-00	47	16V	elect
C405	1-102-848-00	180p		5%
C406, 407	1-108-638-00	0.1	100V	10% mylar
C408	1-123-319-00	47	16V	elect
C410, 411	1-102-978-00	220p		5%
C412	1-101-004-00	0.01		
C413, 414	1-102-824-00	470p		5%
C415	1-123-352-00	1	50V	elect
C416	1-123-316-00	10	16V	elect
C417	1-101-004-00	0.01		
C418, 419	1-102-518-00	33p		0.5%
C420	1-102-824-00	470p		5%
C421	1-123-320-00	100	16V	elect
C422–425	1-123-319-00	47	16V	elect
C426–429	1-123-320-00	100	16V	elect
C430	1-123-319-00	47	16V	elect
C431	1-102-978-00	220p		5%
C432	1-102-848-00	180p		5%
C433, 434	1-102-978-00	220p		5%
C435	1-102-892-00	22p		5%

DIODES

Ref. No.	Part No.	Description
D401	8-719-815-55	1S1555
D403	8-719-815-55	1S1555
D407	8-719-815-55	1S1555

ICs

Ref. No.	Part No.	Description
IC401	8-759-900-00	SN74LS00N
IC402	8-759-900-73	SN74LS73N
IC403	8-759-900-93	SN74LS93N
IC404–406	8-759-900-00	SN74LS00N
IC407	8-759-901-23	SN74LS123N

COILS

Ref. No.	Part No.	Description
L401	1-407-578-00	Variable 470μH
L402	1-407-573-00	Variable 47μH

Ref. No.	Part No.	Description	Remark
		TRANSISTORS	
⇒ Q401	8-729-612-77	2SA1027R	
Q402, 403	8-724-375-01	2SC403C	
⇒ Q404	8-729-612-77	2SA1027R	
Q405	8-724-375-01	2SC403C	
⇒ Q406	8-729-612-77	2SA1027R	
Q407, 408	8-724-375-01	2SC403C	
⇒ Q409	8-729-612-77	2SA1027R	
		RESISTORS	
R401	1-246-848-00	2.4k	carbon
R402	1-246-791-00	4.7k	carbon
R403	1-214-150-00	5.6k ¼W	1% metal oxide
R404	1-214-136-00	1.5k ¼W	1% metal oxide
R405	1-246-783-00	1k	carbon
R406	1-246-796-31	12k	carbon
R407	1-214-174-00	56k ¼W	1% metal oxide
R408	1-214-134-00	1.2k ¼W	1% metal oxide
R409	1-246-767-00	47	carbon
R410	1-214-164-00	22k ¼W	1% metal oxide
R411	1-246-787-00	2.2k	carbon
R412	1-246-767-00	47	carbon
R413	1-246-797-00	15k	carbon
R414	1-246-767-00	47	carbon
R415	1-246-788-00	2.7k	carbon
R416	1-246-791-00	4.7k	carbon
R417	1-246-787-00	2.2k	carbon
R418	1-246-795-00	10k	carbon
R421	1-246-797-00	15k	carbon
R422	1-246-799-00	22k	carbon
R423	1-246-797-00	15k	carbon
R424	1-246-799-00	22k	carbon
R425	1-246-776-00	270	carbon
R426	1-246-783-00	1k	carbon
R427	1-246-783-00	1k	carbon
R428	1-246-787-00	2.2k	carbon
R429	1-247-049-00	470k	carbon
R430	1-246-777-00	330	carbon
R431	1-246-795-00	10k	carbon
R432	1-246-780-00	560	carbon
R433	1-246-783-00	1k	carbon
R434	1-246-841-00	620	carbon
R435	1-246-789-00	3.3k	carbon
R436	1-246-778-00	390	carbon
R437	1-246-791-00	4.7k	carbon
R438	1-246-776-00	270	carbon
R439	1-246-791-00	4.7k	carbon
R440	1-246-795-00	10k	carbon
R441	1-246-791-00	4.7k	carbon
R443	1-214-177-00	75k ¼W	1% metal oxide
R444, 445	1-246-795-00	10k	carbon
R446	1-214-149-00	5.1k ¼W	1% metal oxide
RV401	1-224-940-00	variable, 10k	H. POSITION
RV402	1-224-940-00	variable, 10k	H. HATCH WIDTH
RV403	1-224-942-00	variable, 50k	H. BLK WIDTH

Ref. No.	Part No.	Description			Remark
21. V BOARD					
	♦ A-1347-001-A	V Board, complete			E-305
		CAPACITORS			
C301	1-102-518-00	33p		0.5%	
C302	1-102-514-00	22p		0.5%	
C303	1-123-316-00	10	16V	elect	
C304	1-108-630-00	0.022	100V	10% mylar	
C305	1-123-319-00	47	16V	elect	
C306	1-108-634-00	0.047	100V	10% mylar	
C307	1-108-626-00	0.01	100V	10% mylar	
C308	1-123-319-00	47	16V	elect	
C309	1-101-006-00	0.047			
C310	1-102-973-00	100p		5%	
C311	1-123-319-00	47	16V	elect	
C312	1-101-006-00	0.047			
C313	1-102-820-00	330p		5%	
C314	1-123-319-00	47	16V	elect	
C315	1-101-006-00	0.047			
C317	1-123-319-00	47	16V	elect	
C318	1-101-006-00	0.047			
C319	1-123-317-00	22	16V	elect	
C320	1-123-351-00	0.47	50V	elect	
C321	1-108-618-00	0.0022	100V	10% mylar	
C322	1-123-319-00	47	16V	elect	
C323	1-101-006-00	0.047			
C324	1-102-824-00	470p		5%	
C325	1-101-006-00	0.047			
C326	1-123-316-00	10	16V	elect	
C327, 328	1-102-978-00	220p		5%	
C329	1-101-006-00	0.047			
C330	1-123-316-00	10	16V	elect	
C331	1-108-634-00	0.047	100V	10% mylar	
C332	1-108-614-00	0.001	100V	10% mylar	
C333	1-102-824-00	470p		5%	
C334	1-123-316-00	10	16V	elect	
C335	1-101-006-00	0.047			
C336, 337	1-102-848-00	180p		5%	
C338	1-108-614-00	0.001	100V	10% mylar	
C339	1-101-006-00	0.047			
C340	1-102-973-00	100p		5%	
C341	1-102-530-00	120p		5%	
C342	1-123-316-00	10	16V	elect	
C343	1-101-006-00	0.047			
C344	1-123-316-00	10	16V	elect	
C345	1-101-006-00	0.047			
C346	1-108-626-00	0.01	100V	10% mylar	
C347	1-102-824-00	470p		5%	
C348	1-123-316-00	10	16V	elect	
C349	1-108-634-00	0.047	100V	10% mylar	
C350, 351	1-102-848-00	180p		5%	
C352	1-102-978-00	220p		5%	
C353	1-108-614-00	0.001	100V	10% mylar	
C354	1-123-316-00	10	16V	elect	
C355	1-101-006-00	0.047			
C356	1-123-316-00	10	16V	elect	
C357	1-101-006-00	0.047			
C358	1-123-316-00	10	16V	elect	
C359	1-101-006-00	0.047			
C360	1-123-316-00	10	16V	elect	
C361, 362	1-101-006-00	0.047			
C363	1-102-824-00	470p		5%	
C364–368	1-102-978-00	220p		5%	
C369	1-123-316-00	10	16V	elect	
C370	1-101-006-00	0.047			
C371	1-123-316-00	10	16V	elect	
C372	1-101-006-00	0.047			
C373	1-123-316-00	10	16V	elect	
C374	1-101-006-00	0.047			
C375	1-123-316-00	10	16V	elect	
C376	1-101-006-00	0.047			
C377	1-123-320-00	100	16V	elect	
C378	1-108-630-00	0.022	100V	10% mylar	
C379	1-123-319-00	47	16V	elect	
C381–383	1-102-978-00	220p		5%	
		DIODES			
D301–313	8-719-815-55	1S1555			

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description		Remark
		ICs		
IC301	8-759-901-22	SN74LS122N		
IC302	8-759-900-04	SN74LS04N		
IC303	8-759-900-00	SN74LS00N		
IC304	8-759-901-23	SN74LS123N		
IC305–307	8-759-115-55	μPC1555C		
IC308	8-759-145-58	μPC4558C		
IC309–311	8-759-900-93	SN74LS93N		
IC312	8-759-902-79	SN74LS279N		
IC313	8-759-900-00	SN74LS00N		
IC314	8-759-900-04	SN74LS04N		
IC315	8-759-900-00	SN74LS00N		
		TRANSISTORS		
Q301, 302	8-724-375-01	2SC403C		
⇒ Q303, 304	8-729-612-77	2SA1027R		
Q305–311	8-724-375-01	2SC403C		
⇒ Q312–314	8-729-612-77	2SA1027R		
Q315–319	8-724-375-01	2SC403C		
⇒ Q320, 321	8-729-612-77	2SA1027R		
		RESISTORS		
R301	1-214-149-00	5.1k	¼W	1% metal oxide
R303	1-246-788-00	2.7k		carbon
R304	1-246-791-00	4.7k		carbon
R305	1-246-836-00	240		carbon
R306	1-246-797-00	15k		carbon
R307	1-246-783-00	1k		carbon
R308	1-246-759-00	10		carbon
R309	1-246-837-00	300		carbon
R310	1-246-797-00	15k		carbon
R311	1-246-531-00	270k	¼W	carbon
R312	1-246-783-00	1k		carbon
R313	1-246-785-00	1.5k		carbon
R314	1-246-783-00	1k		carbon

Ref. No.	Part No.	Description			Remark
R315	1-246-531-00	270k		¼W	carbon
R316	1-246-795-00	10k			carbon
R317	1-202-449-00	560k	5%	¼W	composition
R318	1-246-797-00	15k			carbon
R319	1-246-788-00	2.7k			carbon
R320	1-246-791-00	4.7k			carbon
R321	1-246-838-00	360			carbon
R322	1-246-780-00	560			carbon
R323	1-246-852-00	5.1k			carbon
R324	1-246-800-00	27k			carbon
R325	1-246-865-00	62k			carbon
R326	1-246-785-00	1.5k			carbon
R327	1-246-788-00	2.7k			carbon
R328	1-246-795-00	10k			carbon
R329	1-246-785-00	1.5k			carbon
R330	1-246-799-00	22k			carbon
R331	1-246-783-00	1k			carbon
R332	1-246-790-00	3.9k			carbon
R333, 334	1-246-795-00	10k			carbon
R335	1-246-798-00	18k			carbon
R336	1-246-797-00	15k			carbon
R337	1-246-799-00	22k			carbon
R338	1-246-797-00	15k			carbon
R339	1-246-799-00	22k			carbon
R340	1-246-801-00	33k			carbon
R341	1-246-807-00	100k			carbon
R342	1-214-179-00	91k		¼W	1% metal oxide
R343	1-246-771-00	100			carbon
R344	1-246-795-00	10k			carbon
R345	1-214-179-00	91k		¼W	1% metal oxide
R346	1-214-156-00	10k		¼W	1% metal oxide

Ref. No.	Part No.	Description		Remark
R347	1-214-173-00	51k	¼W	1% metal oxide
R348	1-246-795-00	10k		carbon
R349	1-214-140-00	2.2k	¼W	1% metal oxide
R350	1-214-148-00	4.7k	¼W	1% metal oxide
R351, 352	1-246-795-00	10k		carbon
R353	1-246-860-00	24k		carbon
R354	1-246-793-00	6.8k		carbon
R355	1-246-797-00	15k		carbon
R356	1-246-799-00	22k		carbon
R357	1-246-776-00	270		carbon
R358	1-214-175-00	62k	¼W	1% metal oxide
R359	1-246-797-00	15k		carbon
R360	1-246-799-00	22k		carbon
R361	1-246-795-00	10k		carbon
R362	1-246-797-00	15k		carbon
R363	1-246-799-00	22k		carbon
R364	1-246-797-00	15k		carbon
R365	1-246-799-00	22k		carbon
R366	1-246-797-00	15k		carbon
R367	1-246-799-00	22k		carbon
R368	1-246-797-00	15k		carbon
R369	1-246-799-00	22k		carbon
R370	1-246-776-00	270		carbon
R371	1-214-145-00	3.6k	¼W	1% metal oxide
R372	1-214-148-00	4.7k	¼W	1% metal oxide
R373	1-214-146-00	3.9k	¼W	1% metal oxide
R374	1-246-795-00	10k		carbon
R375	1-246-799-00	22k		carbon
R376	1-214-149-00	5.1k	¼W	1% metal oxide
R377	1-246-797-00	15k		carbon
R378	1-246-798-00	18k		carbon
R379	1-246-797-00	15k		carbon
R380	1-246-799-00	22k		carbon
R381	1-246-798-00	18k		carbon
R382	1-246-797-00	15k		carbon
R383	1-246-799-00	22k		carbon
R384	1-246-797-00	15k		carbon
R385	1-246-799-00	22k		carbon
R386	1-246-798-00	18k		carbon
RV301	1-224-941-00	variable, 20k		H. DL
RV302	1-224-941-00	variable, 20k		H.P WIDTH
RV303	1-224-940-00	variable, 10k		½H. DL

Ref. No.	Part No.	Description	Remark
22. W BOARD			
	♦1-600-345-00	W Board	E-351
		CAPACITORS	
C910–915	1-102-851-21	Capacitor, 15p ceramic	
23. XA BOARD			
	♦1-600-349-00	XA Board	E-201
		DIODE	
⇒LED4501	8-719-803-07		TLR306

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description		Remark

24. XB BOARD

Ref. No.	Part No.	Description		Remark
	♠ 1-600-350-00	XB Board		E-202

CAPACITORS

Ref. No.	Part No.	Description		
C5501	1-101-006-00	0.047		
C5502	1-123-316-00	10	16V	elect

ICs

Ref. No.	Part No.	Description
IC5501	8-759-900-47	SN74LS47N

RESISTORS

Ref. No.	Part No.	Description	
R5501–5507	1-246-780-00	560	carbon
R5508–5511	1-246-795-00	10k	carbon
R5512	1-246-782-00	820	carbon
R5514	1-246-791-00	4.7k	carbon

MISCELLANEOUS

Ref. No.	Part No.	Description
S5501	1-552-898-00	Toggle, tally remote/manual select
S5502	1-552-102-51	Rotary, tally figure set

25. YA BOARD

Ref. No.	Part No.	Description	Remark
	♠ 1-600-359-00	YA Board	E-157

DIODE

Ref. No.	Part No.	Description
D101	8-719-900-92	GL9PR20

26. YB BOARD

Ref. No.	Part No.	Description	Remark
	♠ 1-600-360-00	YB Board	E-151

DIODE

Ref. No.	Part No.	Description
D102	8-719-909-20	GL9NG2

- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description	Remark
		27. MISCELLANEOUS (Chassis parts)	
C901–906	1-102-050-00	Capacitor, 0.01 500V ceramic	
C907	1-102-249-00	Capacitor, 680P 2kV ceramic	
C908	1-130-031-00	Capacitor, 0.22 400V 5% polypropylene	
CNJ902	1-508-382-00	Connector, TALLY-REMOTE	E-352
CNP901	⚠ 1-509-546-00	Connector,AC IN	E-353
F903	⚠ 1-532-259-00	Fuse,1.6AT	} E-303
F-903	⚠ 1-532-557-00	Fuse, 3.15A (normal)	
L901, 902	⚠ 1-425-922-41	Coil, degaussing; DGC	E-55
L-903	⚠ 1-452-214-21	Neck Ass'y	E-56
L-905-1,-2,-3	⚠ 1-451-160-31	Deflection Yoke,DY,CY	E-57
Q901–903	8-729-311-42	Transistor, 2SC1114	
Q904, 905	8-729-301-32	Transistor, 2SC1413A	
R901	1-217-183-00	Resistor, 2.7 15W wirewound (nonflammable)	
R902	1-202-680-00	Resistor, 4.7k 2W composition (pulse resistance)	
S901	⚠ 1-552-895-00	Switch, pushbutton; POWER	E-152
S902	⚠ 1-552-896-00	Switch, pushbutton; DEGAUSE	E-153
S903	⚠ 1-526-572-00	Socket; VOLTAGE SELECTOR	E-301
T901	⚠ 1-446-358-00	Transformer, power	E-308
T902	⚠ 1-439-175-00	Transformer, flyback;FBT	E-206
V901	⚠ 8-738-311-05	Picture Tube, 330VB22	E-58
V901	⚠ 8-738-315-05	Picture Tube, M30JBC20X	E-58
	1-452-032-00	Magnet, disk; 10mm dia	E-53
	1-452-094-00	Magnet, rotatable disk, 15mm dia	E-54
	1-452-146-00	Magnet, BMC	E-51
	⚠ 1-453-081-00	High Voltage Block, HV block	E-207
	1-509-131-00	Connector, BNC	E-354
	1-509-437-22	Socket, power transistor	E-205
	1-533-148-00	Holder, fuse	E-302

Note: There are two kinds of picture tube used for the following serial numbered units.
Serial No. up to 1,5000: 330-VB22
Serial No. 1,5001 and later: M30JBC20X

Ref. No.	Part No.	Description	Remark
		28. PACKING MATERIALS AND ACCESSORIES	
	A-1475-425-A	Board Block Ass'y, Z	
	1-508-171-00	Connector, 10p (for TALLY-REMOTE)	
	⚠ 1-532-259-00	Fuse, 1.6AT	
	⚠ 1-532-557-00	Fuse, 3.15A (normal)	
	⚠ 1-551-812-00	Cord,power	
	3-701-613-00	Bag, polyethylene (for screw or fuse)	
	3-701-623-00	Bag, polyethylene (for Z board)	
	3-701-629-00	Bag, polyethylene (for power cord)	
	3-701-630-00	Bag, polyethylene (for manual)	
	3-703-159-00	Label, destination	
	3-701-730-00	Bag, polyethylene; IBM card	
	4-335-988-00	Label (B), voltage indication	
	● 4-335-998-00	Rail (L), guide	
	● 4-335-999-00	Bracket, guide rail	
	4-337-201-00	Bag, protection	
	4-349-004-01	carton	
	4-337-204-00	Cushion, lower	
	4-337-205-00	Cushion, upper	
	4-337-207-02	Carton, accessory	
	● 4-337-214-00	Nut, plate	
	4-349-002-13	Manual, operation and maintenance	
	4-494-858-21	Card, warranty	
	7-623-212-22	SW5	
	7-682-160-13	Screw, +P4x6	
	7-682-179-01	Screw, +P5x20	
	7-688-005-01	W5, Small	
	7-700-731-03	Driver, VR adjustment	

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-349-002-13

Sony Corporation

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